

# JVC

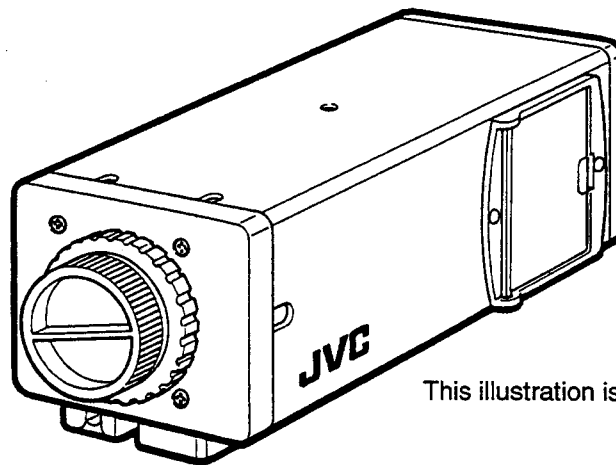
## SERVICE MANUAL

### COLOR VIDEO CAMERA HEAD

# TK-1280E/TK-1180E/TK-1281EG

BASIC CHASSIS

YU



This illustration is Model TK-1280.

**NOTE:**

This service manual is for TK-1280E assembled in Hachioji factory.  
For the unit assembled in Iwai factory, see service manual number 50716.  
The serial numbers

from 09852451 and after	Hachioji
from 10710001 to 09852450	Iwai

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# MAIN PARTS LOCATION

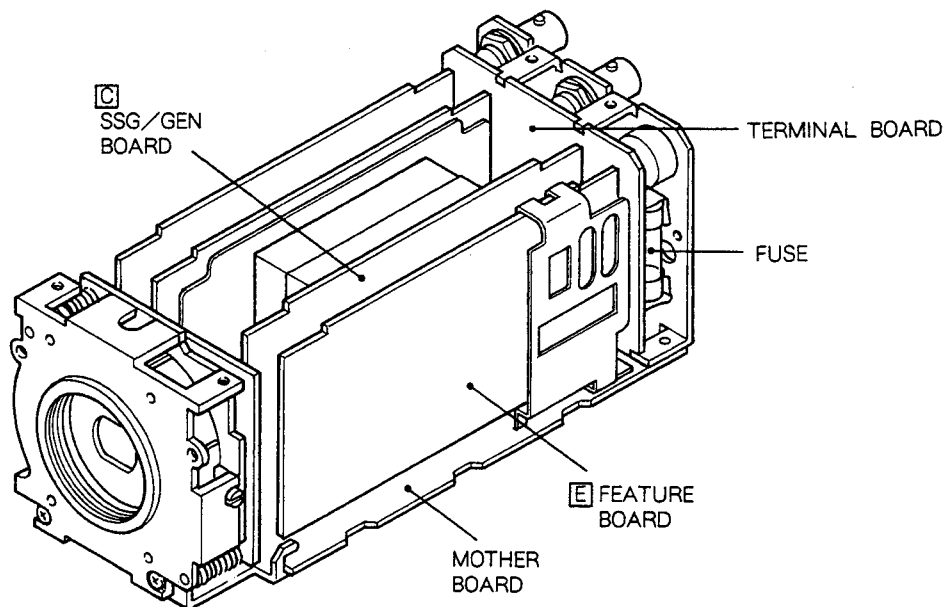


Fig. A

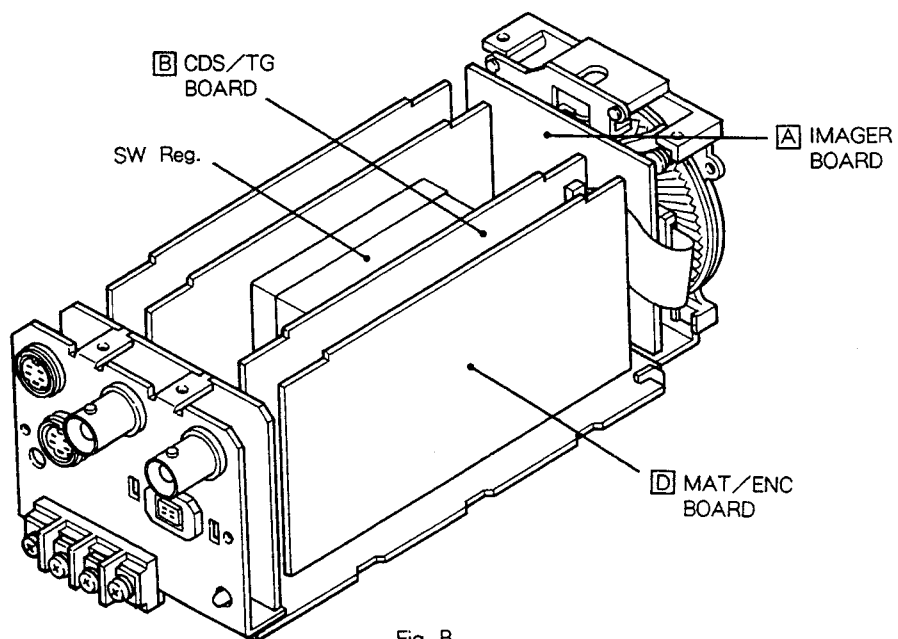


Fig. B

# SPECIFIC SERVICE INSTRUCTIONS

## ■ TWO-SIDE HOLE-THROUGH PC BOARD

A two-sided hole-through PC Board is used on this camera. Patterns and wires are designed extra thin to attain highdensity component mounting. Rough handling may damage the patterns/wires or other components. When disassembling, repairing or adjusting the PC boards, exercise care to avoid damage.

## ■ REPAIRING CIRCUIT BOARD MODULES

### (1) Removing circuit board module

Pull out the circuit board, after removing solder completely with a solder sucker.

#### NOTE:

- Take care not to damage or remove solder from other parts.
- If more than two circuit boards are removed, make sure that they are replaced in the proper position.
- Some circuit boards cannot be removed unless the shielding case and chassis frame have been removed. When removing any circuit board, check if this applies to the PC board.

### (2) Checking circuit board module

To check each circuit board, take out the module and extend with wires, etc.

## ■ REPLACING CHIP COMPONENTS

Use a soldering iron ( temperature 260~300°C. about 17W ) with a slim tip and high insulating ability. those with a solder sucker ( about 55W ) are usually easier to use.

#### NOTE:

This video camera uses many mini-flat ICs. To remove these, melt the solder while picking up the individual pin with fine tipped tweezers or cut off the IC pins. Take care not to scratch or peel off the BOARD foil pattern.

## ■ CHIP COMPONENTS DISPLAY

Besides the resistors, short jumpers, FET's, ceramic capacitors, transistors, and other chip components, the chip tantalum capacitors and chip variable resistor ( CH VR ) are used on the camera. None of these chip components are reusable again once they have been used.

#### NOTE:

1. Avoid rough handling of the VR.
  2. Use a thin-tip insulated-type. screwdriver to adjust the CH VR.
- How to read printings

On certain chip components, printing is applied as follows:

#### ① Chip metal glaze resistor ( CH MG R )

The diagram shown in Fig. A ① is applied to some of these resistors.

Reading method ( Example )

$$\begin{array}{c} 1 \quad 2 \quad 3 \\ \text{---} \quad \text{---} \quad \text{---} \\ \quad \quad \quad \uparrow \\ \quad \quad \quad 12 \times 10^3 \text{ Unit: } [\Omega] \end{array}$$

#### ② Shorting jumper ( 0[Ω] of CH MG R )

No diagram is applied to shorting jumpers. A "0" is printed on Type ① shown in Fig. A

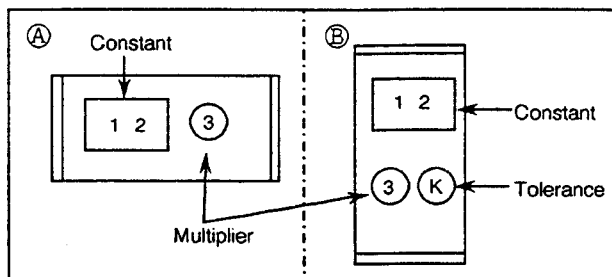


Fig.A Example of CH MG R / CH C Cap.codes

#### ③ Chip ceramic capacitor ( CH C Cap. )

- The diagram shown in Fig. A ② is applied to some of the CH C Caps. On some others, there is no diagram that is of any use to users.

Reading method (Example)

$$\begin{array}{c} 1 \quad 2 \quad 3 \quad K \\ \text{---} \quad \text{---} \quad \text{---} \quad \uparrow \\ \quad \quad \quad \uparrow \\ \quad \quad \quad 12 \times 10^3 \text{ Unit: } [\mu\text{F}], \text{ Tolerance: } K(\pm 10\%) \end{array}$$

- As shown in Fig. B some chip ceramic capacitors are represented by two digits. Table A shows how those figures should be read.

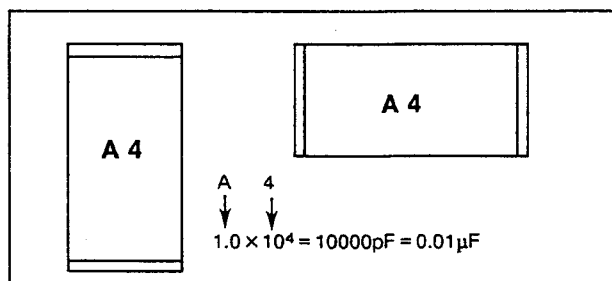


Fig.B Example of CH C Cap.codes



Alphabet	A	B	C	D	E	F	G	H	J	K
Constant	1.0	1.1	1.2	1.3	1.5	1.6	1.8	2.0	2.2	2.4
Alphabet	L	M	N	P	Q	R	S	T	U	V
Constant	2.7	3.0	3.3	3.6	3.9	4.3	4.7	5.1	5.6	6.2
Alphabet	W	X	Y	Z		a	b	d	e	f
Constant	6.8	7.5	8.2	9.1		2.5	3.5	4.0	4.5	5.0
Alphabet	m	n	t	y						
Constnt	6.0	7.0	8.0	9.0						
Numeral	0	1	2	3	4	5	6	7	8	9
Multiplier	10 <sup>0</sup>	10 <sup>1</sup>	10 <sup>2</sup>	10 <sup>3</sup>	10 <sup>4</sup>	10 <sup>5</sup>			10 <sup>-2</sup>	10 <sup>-1</sup>

Table A CH C Cap. capacity value

## ④ Chip Variable Resistor (CH VR)

A two-digit code is printed on some CH VRs.

They indicate a reading method, as shown in Table B.

Three-digit codes are also used. These codes are read in the same way as those for CH MG R.

## ⑤ Chip Tantalum Capacitor (CH Tan. Cap.)

The diagram shown in Fig.C is applied to some of the CH Tan. Caps.

Reading methd (Example)

The type shown in Fig.C is 10 $\mu$ F, 16WV chip tantalum capacitor.

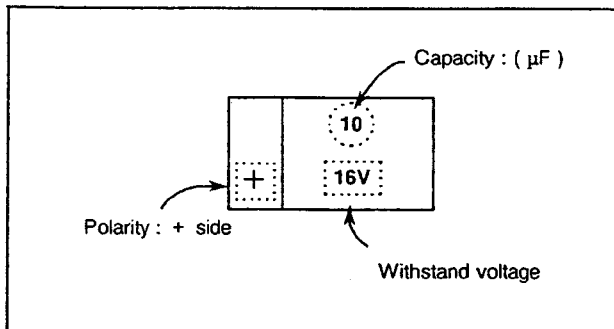


Fig.C Example of CH Tan. C Cap. codes

## ⑥ Chip Transistor

The labels shown in Table C are applied to the chip transistor

Parts No.	Display method
2SC2778(B,C,D)	<div>Ⓚ Ⓛ</div> <div>K. C K. D</div> <div>denotes</div> <div>2SC2778 parts ranking : B</div>
2SC2404(D)	<div>U. D</div>
32SD601(Q,R)	<div>Y. Q Y. R</div>
2SD601A(Q,R)	<div>Z. Q Z. R</div>
2SD1030(R)	<div>1ZR</div>
2SB709(P,R)	<div>A. P A. Q A. R</div>
32SB792(Q,T)	<div>I. Q I. R I. S I. T</div>
2SB970(Q,S)	<div>1RQ 1RR 1RS</div>
2SA1022(C)	<div>E. C</div>

Table C Chip transistor labels

## ⑦ Chip FET

The following printing is applied to the Chip FET.

Parts No.	Display method
2SK198(Q,R)	<div>Ⓚ Ⓛ</div> <div>10R</div> <div>denotes</div> <div>2SK198 parts ranking : Q</div>
2SK316	<div>1KP 1KQ</div>

Table D Chip FET codes

## ⑧ Chip Diode

The following labels are applied to the Chip Diode.

Parts No.	Display method
MA151WA	<div>Ⓜ N</div> <div>denotes</div> <div>MA151</div>
MA151K	<div>M. H</div>
MA151WK	<div>M. T</div>
MA151A	<div>M. A</div>
MA157	<div>M. R</div>
MA3051	<div>5. 1</div>
MA3120 (L-H)	<div>12H 12L 12M</div>

Table E The display of chip diode

Code	12	22	32	52	72	13	23	33	54	73	14
Resistance Value	100 $\Omega$	220 $\Omega$	330 $\Omega$	470 $\Omega$	680 $\Omega$	1k $\Omega$	2.2k $\Omega$	3.3k $\Omega$	4.7k $\Omega$	6.8k $\Omega$	10k $\Omega$
Code	24	34	54	74	15	25	35	55	75	16	
Resistance Value	22k $\Omega$	33k $\Omega$	47k $\Omega$	68k $\Omega$	100k $\Omega$	220k $\Omega$	330k $\Omega$	470k $\Omega$	680k $\Omega$	1M $\Omega$	

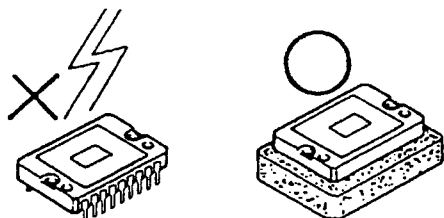
Table B CH VR resistance value display method in two-digit

## ■ "CHARGE COUPLED DEVICE (CCD) "IMAGER

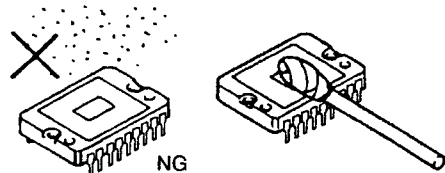
### 1 Precautions for handling and replacing CCD imager

CCD is characteristic of many advantages, but it also has some disadvantages. The following are measures to deal with these disadvantages.

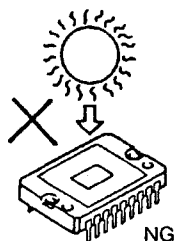
- (1) CCD imager is a circuit element which is very sensitive to static electricity.
  - The potential differences caused by the electrostatic charge which have been accumulated in the clothing and human body-sometimes destruct the insulation of the CCD imager. Therefore, handle the "high-priced" CCD imager with more attention thereto than to the C-MOS ( Complementary MOS ), especially during the dry season and in dry places.



- Maintain the CCD imager in the provided pack or aluminum foil so that it can be kept at the same potential. Never unpack its container until the very moment of servicing.
- (2) The CCD imager is easily damaged by dust. Also it suffers considerable deterioration, when exposed to strong light.
- When servicing, make sure that the CCD imager is kept free from such foreign material as dust. Use dry soft cloth or soft cloth moistured with ethyl alcohol to wipe off the foreign material.



- Do not exposed the CCD imager to such strong light as direct sunlight.



- (3) CCD imager is damaged instantly by the following malfunctions. Pay close attention to these malfunctions before servicing

- ① After removal of CCD, charge may remain at each terminal in the circuit side for some time. In this situation, when CCD is inserted to the socket, CCD may be distracted instantaneously due to the charge. To avoid this, CCD should be inserted with passage of some time ( 2 to 3 minutes ) after removal.

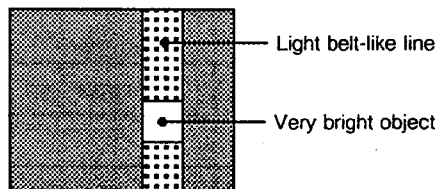
## ■ SPECIAL CHARACTERISTICS OF A CCD

The following phenomena can be expected when using the video camera with the CCD imager; they are not malfunctions.

### • Smear phenomenon

This phenomenon occurs when shooting a very bright object ( such as electronic light, fluorescent lamp, the sun or a strong reflection ).

Video monitor screen.



Due to the interline-transfer organization of the CCD image sensors ( Refer to "The Interline-transfer Organization of the CCD Image Sensors" ), this phenomenon is caused by electronic charges generated beneath the photosensors by a light with a long wavelength, such as an infrared light.

In the shutter mode, as the signal level drops down to 1/20, the smear level becomes high relatively. However this means no failure.

### • False signal

When vertical stripes or straight lines are shot, they may look wavy.

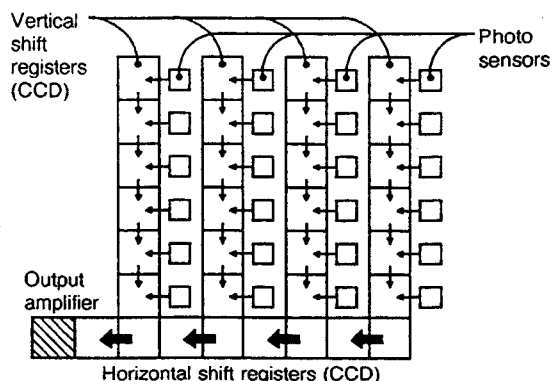
### • Blemishes

The photosensor elements generate electronic charges which ultimately produce horizontal and vertical rows in the CCD image sensor.

Therefore, any malfunctioning photosensor element will eventually cause a blemish on the monitor screen.

### The interline-transfer organization of CCD image sensors

This CCD video camera module adopts an interline transfer organization in which precisely aligned photosensors and vertical shift registers are arrayed interlinearly and horizontal shift register links up with the vertical shift register, as shown. Light variations are sensed by the photosensors, which generate electronic charges proportional to the light intensity. The generated charges are fed into the vertical shift registers all at one. The charges are then transferred from the vertical shift registers to the horizontal shift registers successively and finally reach the output amplifier to be read out successively.



## ■ DISASSEMBLY PROCEDURE

- Be sure to turn OFF power before disassembly of parts.

### 1. Removal of Casing Parts

#### 1-1 Removing the rear cover

- (1) Remove the two screws (A) shown in Figure 1.

#### 1-2 Removing the tripod base

- (1) Remove the three screws (B) in Figure 1.

#### 1-3 Removing the aluminum case

- (1) Remove the screw (C) in Figure 1.
- (2) Pull out the case in following the arrow.

#### 1-4 Removing the front die casting

- (1) Remove the C mount adapter.
- (2) Remove the four screws (D) in Figure 1.

#### 1-5 Removing the side cover

- (1) Remove the two screws (E) in Figure 1.
- You may remove the aluminum case without removing the side cover.

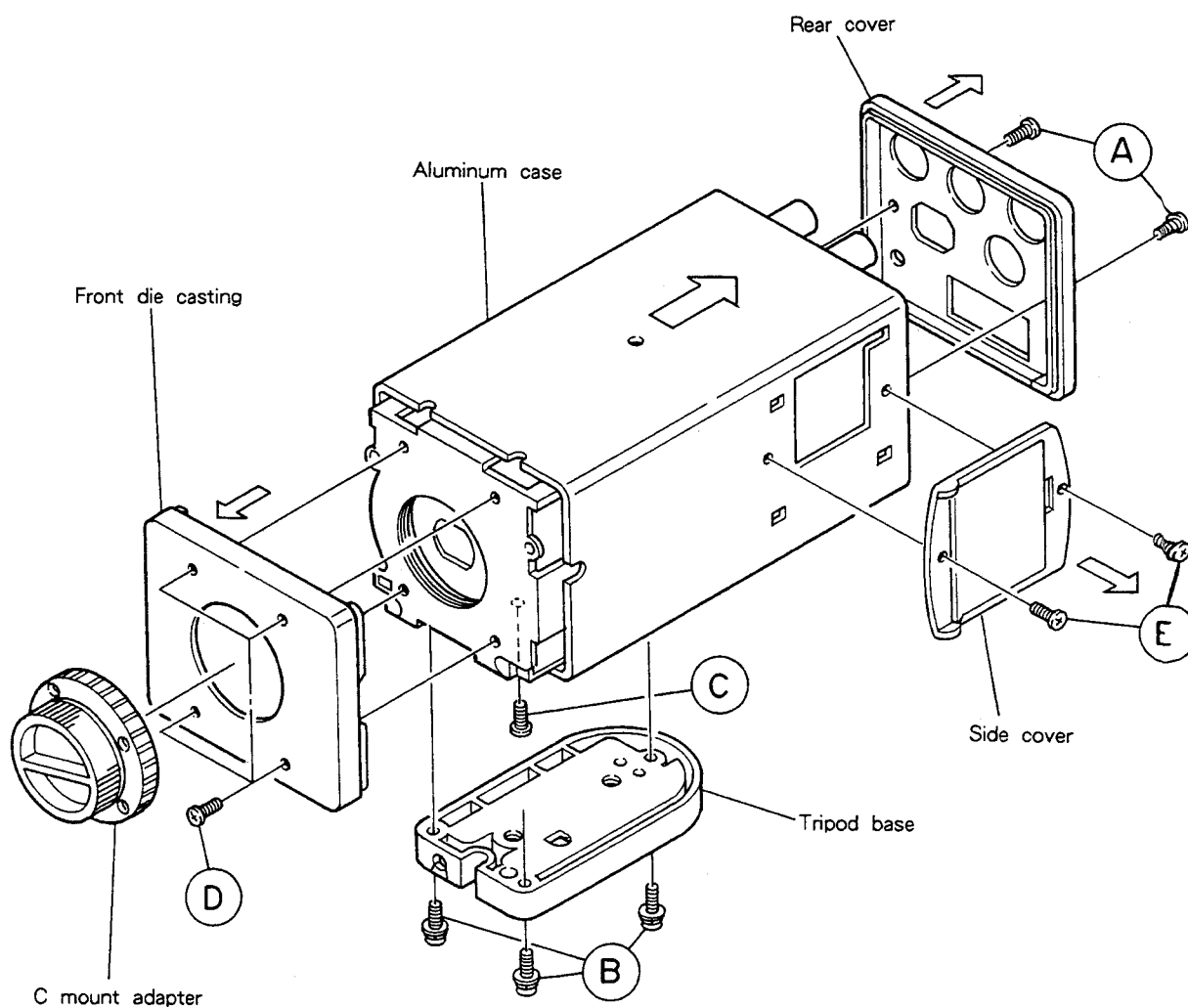


Figure 1 removing the casing parts

## 2. Removal of Chassis Parts

\* First remove the casing parts.

### 2-1. Removing the top frame

- (1) Remove the four screws (F) in Figure 2.
- (2) Then the two PB holders will be removed at the same time.

### 2-2. Removing the chassis mount

- (1) Remove the flexible wire in Figure 3. (Pull the stopper in the direction of the arrows.)
- (2) Remove the two screws (G) in Figure 2.

### 2-3. Removing the rear terminal assembly

- (1) Remove the two screws (H) in Figure 2.

### 2-4. Removing the bottom frame

- (1) Remove the two screws (I) in Figure 2.
- (2) Move the frame in the direction of the arrow and remove it.
- (3) The side shield will then be removed at the same time.

### 2-5. Removing the module boards

- (1) Remove the top frame and the side shield.
- (2) Pull out each module upward and remove it.

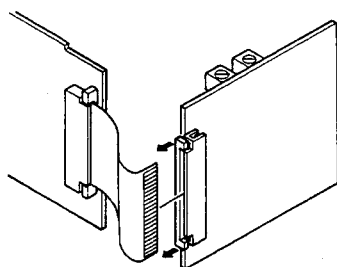


Figure 3 Removing the flexible wire

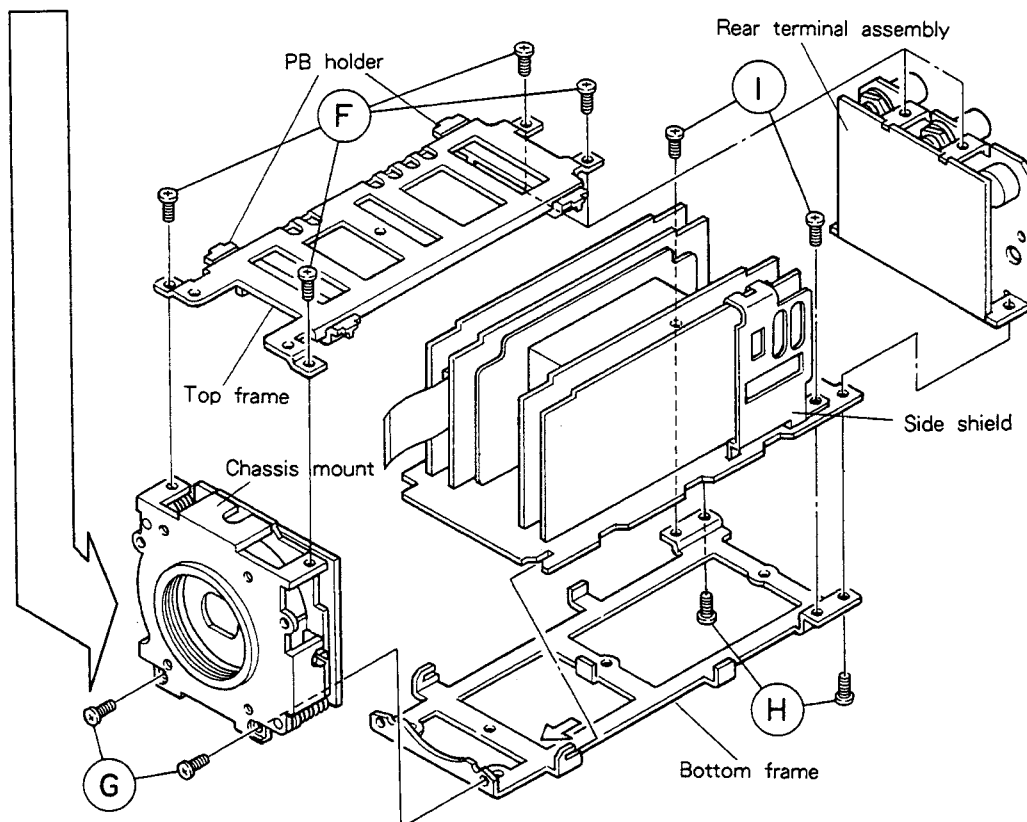


Figure 2 Removing the chassis parts

### 3. Replacement of the CCD Imager

- (1) Follow Paragraph 2-2 or the removal of the chassis mount to remove the chassis mount.
- (2) Remove the two screws (J) shown in Figure 4.
- (3) Pull out the imager module board in following the arrow and remove it from the chassis mount.
- (4) Remove the two screws (K) in Figure 4 and remove the LPF holder and the low-pass filter.
- (5) Remove the two screws (L) in Figure 4 and remove the CCD holder, CCD mask, and CCD imager.
- (6) After replacement, install a CCD imager with the hole on the back of it facing upward. (See Figure 5.)

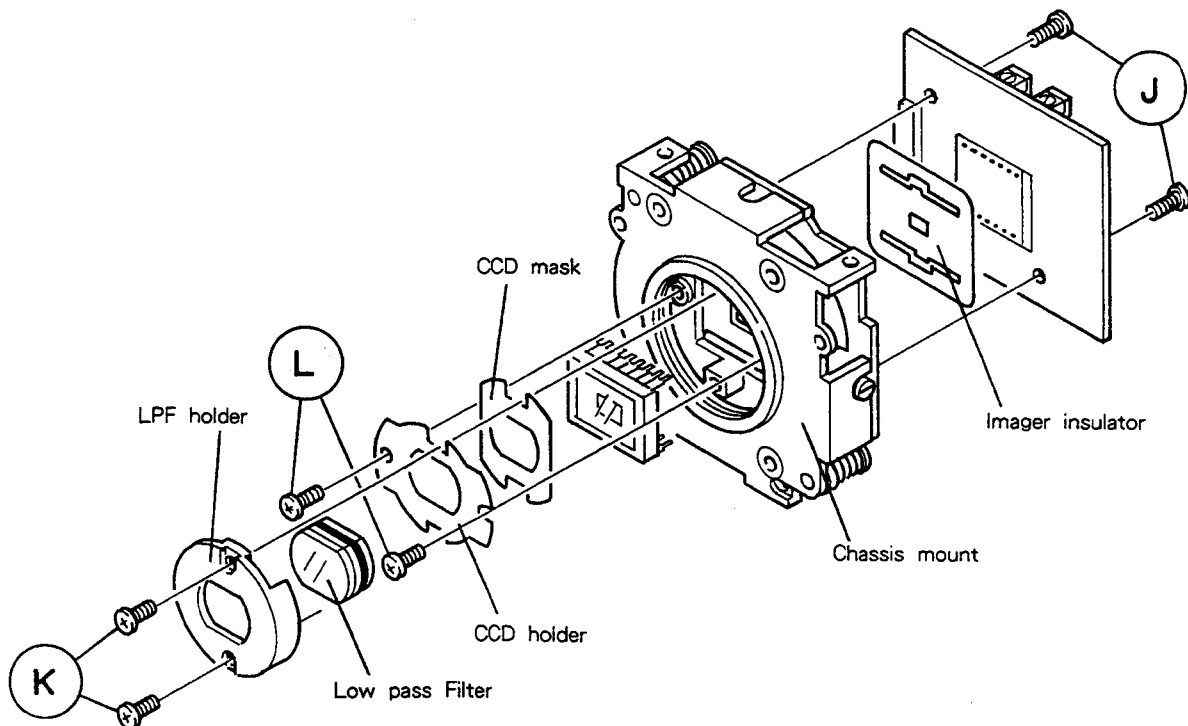


Figure 4 Replacing the CCD imager

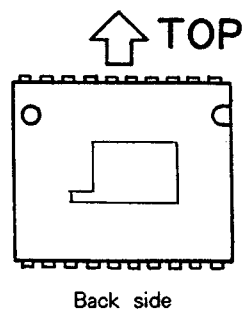


Figure 5 CCD direction

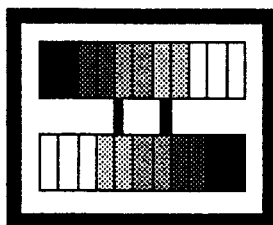
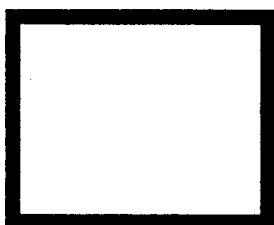
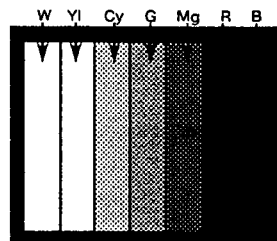
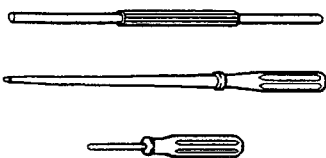
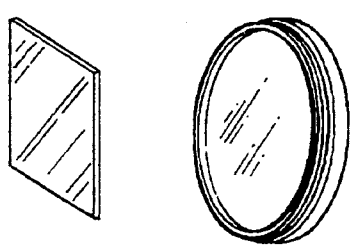
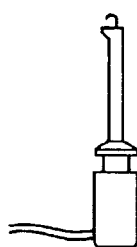
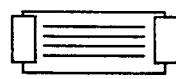
# SERVICE ADJUSTMENT

## TOOLS AND FIXTURES ADJUSTMENT

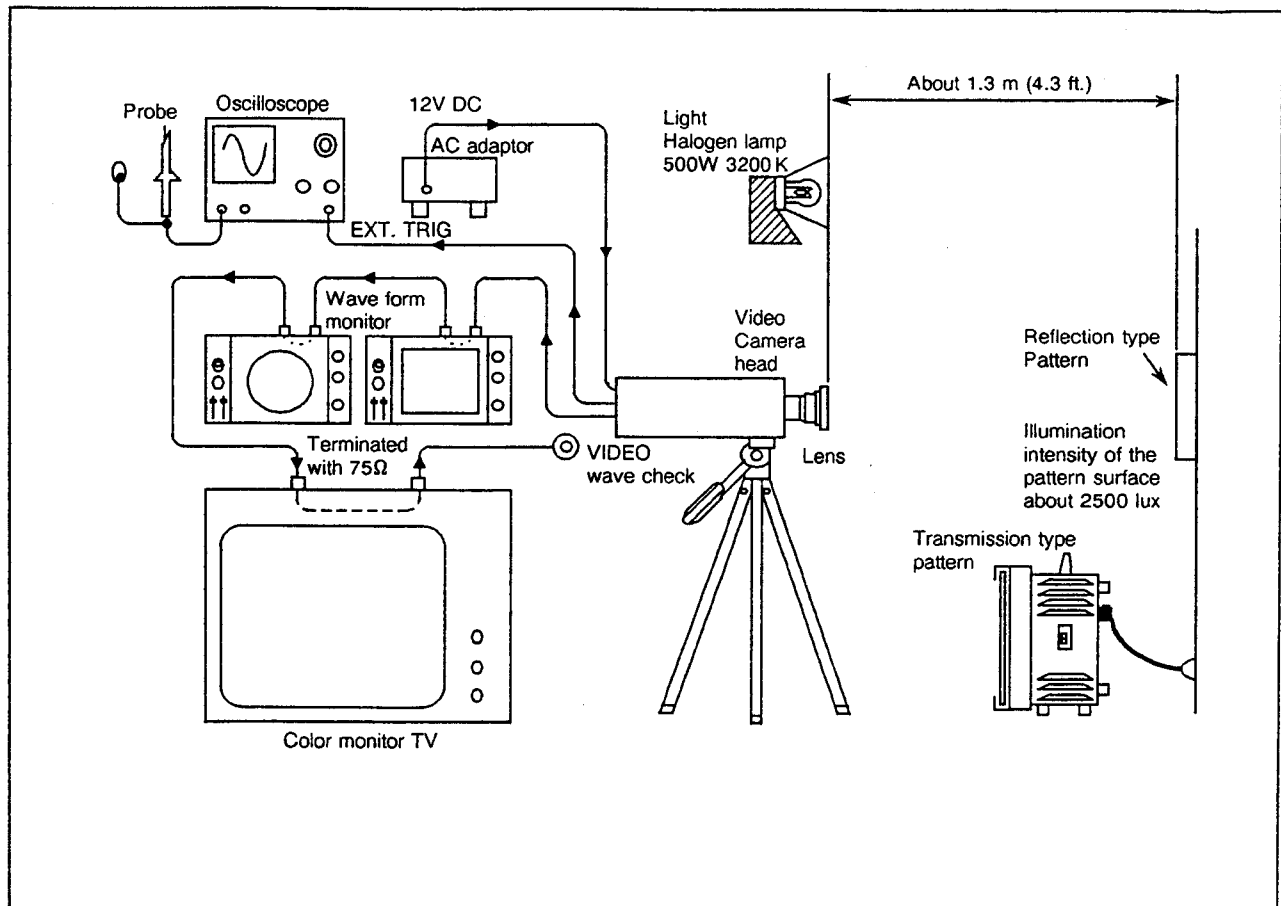
### MEASURING INSTRUMENTS

- |                                      |        |                                      |   |
|--------------------------------------|--------|--------------------------------------|---|
| 1. Oscilloscope .....                | 1      | 6. Power supply .....                | 1 |
| 2. Color monitor TV (PAL-type) ..... | 1      | Voltage: 12 V DC (for 1280E/1180E)   |   |
| Color temperature : 9,300K           |        | 7. Vectorscope (PAL-type) .....      | 1 |
| 3. Lights .....                      | 1 or 2 | Used only if necessary.              |   |
| Color temperature : 3,200K           |        | 8. Waveform monitor (PAL-type) ..... | 1 |
| 4. Frequency counter .....           | 1      | Used only necessary.                 |   |
| 5. DIGITAL DC voltmeter(DVM). ....   | 1      |                                      |   |

### TOOLS AND FIXTURES

1.Patterns				(Gray scale Pattern)	(White Pattern)	(Color bar Pattern)												
<b>Note:</b> Reflection-type patterns eventually suffer from drops in signal output level or loss of output uniformity.Periodic replacement is recommended.																		
				<b>GS-2A*</b> Reflective type( $\gamma = 2.2$ )	<b>WC-2A*</b> Reflective type	<b>CC-2T*</b> Transmissive type												
2.DRIVERS				3.COLOR TEMP.CONVERSION FILTER		4.PIN CLIP												
  Adj. driver				  CC-12G  C10 + C8 W4 + W2 C12  Kenko filter, C10,C8, W4,W2,C12 KODAK Wratten gelatin filter, CC-12G		  Slightly bending the pin tip facilitates its use.												
5.LENS				6.MODULE EXTENSION JIG		<b>Note:</b>												
C-mount lens or CS-mount lens.Iris can be controlled manually.  ● Lens flange-back should be standard ● Zoom lens is recommended ● F1.4 lens is recommended.				 <table><tr><td>PIN</td><td>JIG No.</td><td>QTY</td></tr><tr><td>24pin</td><td>SC45283-00A*</td><td>2</td></tr><tr><td>22pin</td><td>SC45283-00B*</td><td>1</td></tr><tr><td>18pin</td><td>SC45283-00C*</td><td>2</td></tr></table> If necessary, please extend PWB and use it to check voltage.		PIN	JIG No.	QTY	24pin	SC45283-00A*	2	22pin	SC45283-00B*	1	18pin	SC45283-00C*	2	Order parts marked with an asterisk( * ) in the same way as other general parts. Parts that is not marked with asterisk( * ) are able to get at your side.
PIN	JIG No.	QTY																
24pin	SC45283-00A*	2																
22pin	SC45283-00B*	1																
18pin	SC45283-00C*	2																

# PRIOR TO STARTING ADJUSTMENT



## ( 1 ) Warming up

Before adjustment, turn on the camera to warm it up for more than 10 minutes so that the camera operation may be stabilized.

## ( 2 ) Lighting

- Adjust the distance between the light and pattern so that the illumination on the pattern is about 2,500 lux and the illumination over the entire pattern surface is as uniform as possible.
- Correct adjustment will be impossible if the illumination is too high, too low or uneven.

## ( 3 ) About CCD Imager

The CCD image is susceptible to static electricity. The insulator of this element might be damaged if a potential difference is caused by the electrostatic charge carried by clothes or body. Be careful when holding it because it is costly. Use special care in a dry atmosphere in a dry season.

## 1. Presetting

Before adjustment, preset the following switches :

- 1) INT/EXT-L/L switch → "I/E"
- 2) AGC switch → "OFF"
- 3) White Balance switch → "※" (in-door)
- 4) SHUTTER → "NORM" (OFF)
- 5) BLC → "OFF"

2. In holding a test pin with a probe, take care set contact with any other pin. The CCD imager will be damaged if some test pins are accidentally connected.

## 3. EXT. TRIGGER

In adjusting the signal system, extract the trigger signal as required.

H-rate : TP-11 (ID) [MAT/ENC Board]

V-rate : IC302 Pin ⑦ [FEATURE Board]

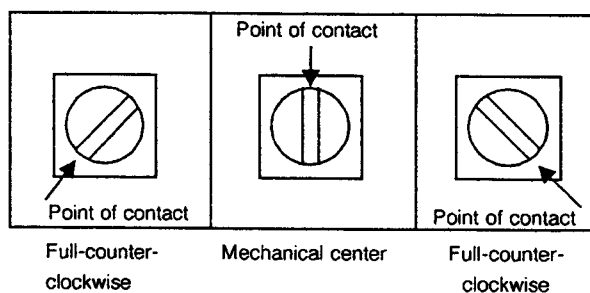
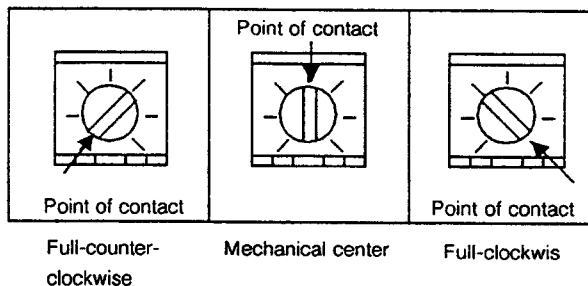
## 4. JUST SCAN

Unless otherwise specified, apply "just scan" to all pattern adjustments.

5. **Repeat adjustments** optimum conditions are established.

## 6. Chip VR

Chip VR rotating position is designated as shown in the figure below for the convenience of explanation, since the chip VR can be rotated 360°.

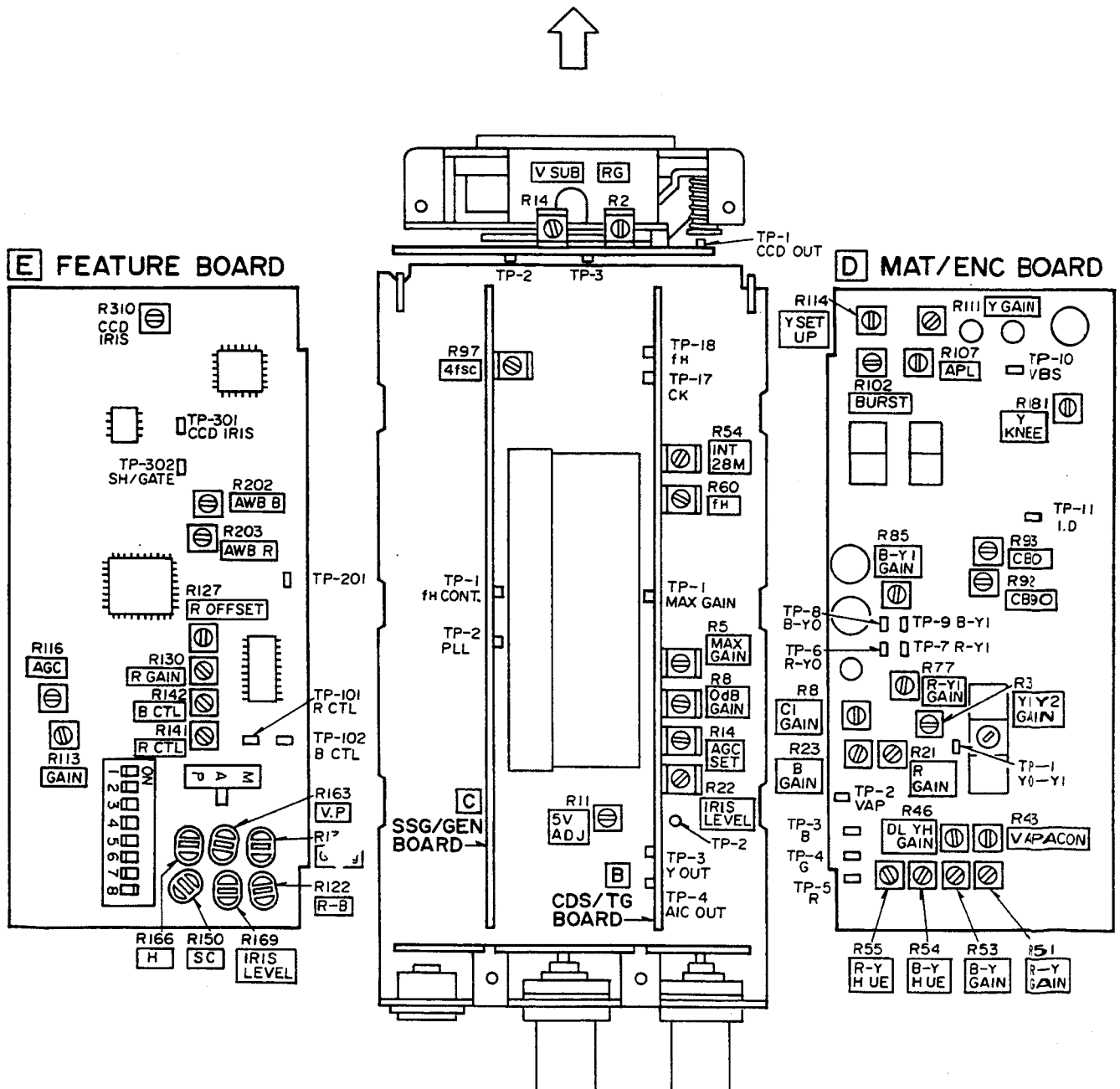


## 7. No Adjustment of unspecified VRs

Never rotate VR's other than those specified by this instruction Manual.

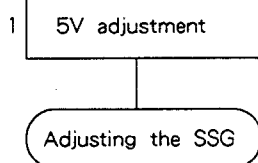


## ADJUSTMENT LOCATIONS

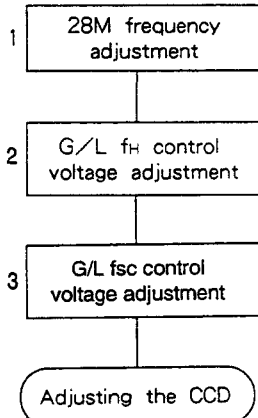


# ADJUSTING STEPS

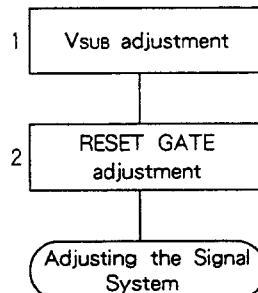
## 1. Adjusting the Voltage



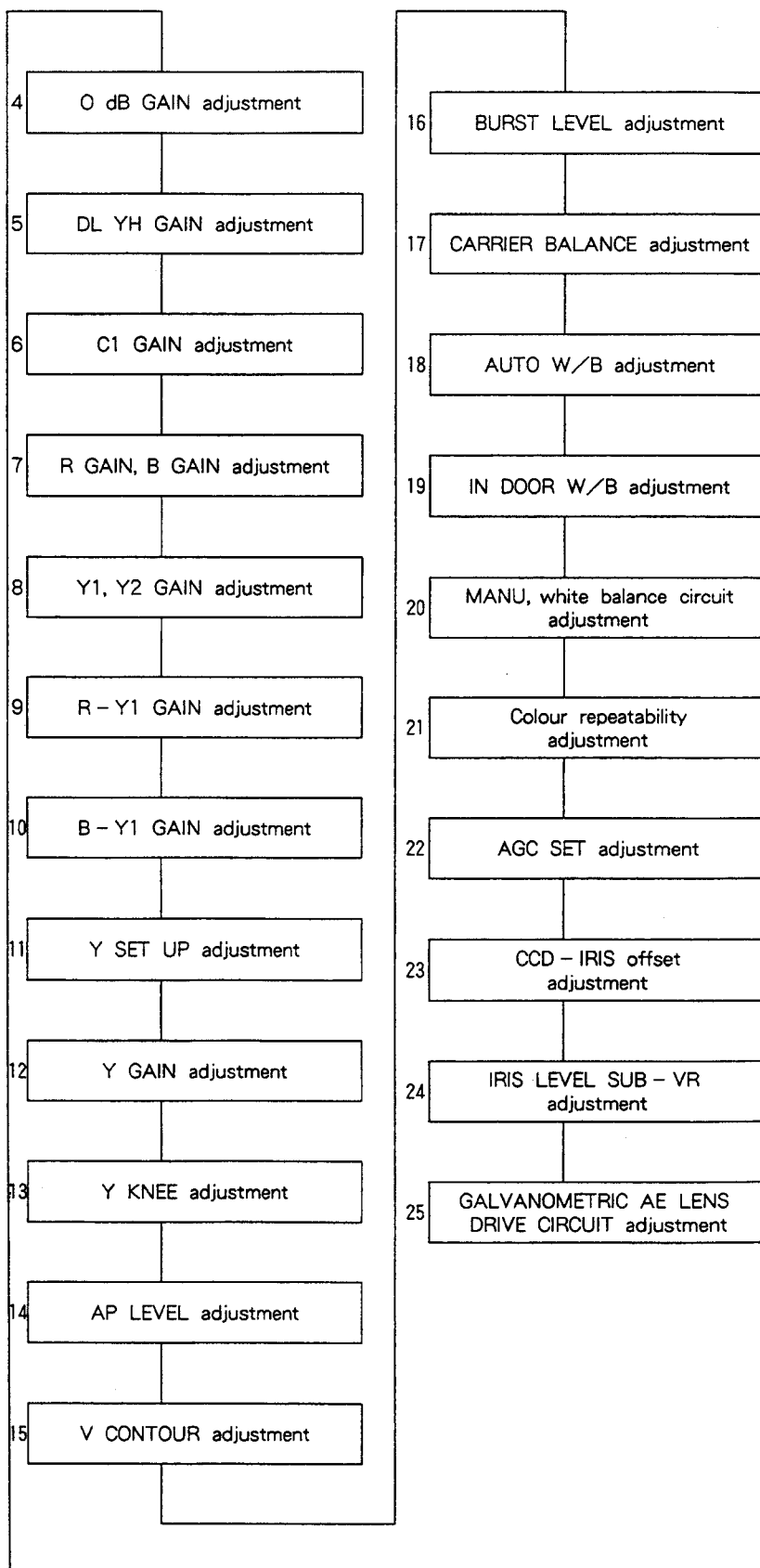
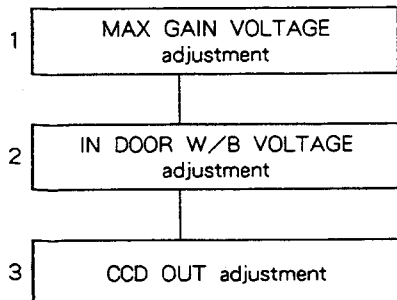
## 2. Adjusting the SSG



## 3. Adjusting the CCD



## 4. Adjusting the Signal System



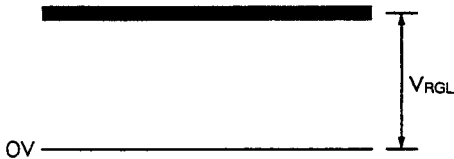
## 1. Adjusting the Voltage

No.	Item	Instrument	Test point	Control	Procedure
1	5V adjustment	Digital voltmeter	TP - 2 (5V) [Mother board]	R11 (5V ADJ) [Mother board]	1. Connect digital voltmeter to TP - 2 (5V) 2. Set the voltage to 5.0V with R11 (5V ADJ).

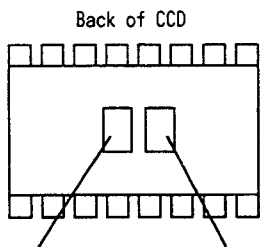
## 2. Adjusting the SSG

No.	Item	Instrument	Test point	Control	Procedure
1	28M frequency adjustment	Oscilloscope	TP - 17 [CDS/TG board]	R54 VR (28MADJ) [CDS/TG board]	1. Connect a frequency counter to TP - 17. 2. Adjust the frequency to $28.6375 \text{ MHz} \pm 10 \text{ Hz}$ with R54 (28MADJ).
2	G/L $f_H$ control voltage adjustment	Oscilloscope	TP - 18 [CDS/TG board] (or TP - 1 [SSG/GEN board])	R60 ( $f_H$ ) [CDS/TG board]	1. Connect an oscilloscope probe to TP - 18. 2. Connect an external SYNC and establish GEN LOCK or LINE LOCK operation. 3. Adjust the voltage to $2.5\text{V} \pm 0.1\text{V}$ with R60 ( $f_H$ ) VR.
3	G/L fsc control voltage adjustment	Oscilloscope	TP - 2 [SSG/GEN board]	R97 (4 fsc) [SSG/GEN board]	1. Connect an oscilloscope probe to TP - 2. 2. Connect an external SYNC and establish GEN LOCK or LINE LOCK operation. 3. Adjust voltage to $3 \text{ V} \pm 0.1 \text{ V}$ with R97 (4 fsc) VR.

3. Adjusting the CCD

No.	Item	Instrument	Test point	Control	Procedure
1	V <sub>SUB</sub> adjustment	Digital voltmeter	TP - 2 [IMEGER board]	R14 (V <sub>SUB</sub> ) [IMEGER board]	<div>1. Connect a digital voltmeter to TP - 2.</div> <div>2. Set an imager-specified voltage V<sub>SUB</sub> with R14 (V<sub>SUB</sub>).</div> <div>■ The specified voltage is indicated on the back of CCD. See the box below : How to compute the specified voltages.</div>
2	RESET GATE adjustment	Oscilloscope	TP - 3 [IMEGER board]	R2 (RG) [IMEGER board]	<div>1. Connect an oscilloscope to TP - 3.</div> <div>2. Set the reset gate pulse low level to an image-specified voltage VRGL with R2 (RG).</div> <div>■ The specified voltage is indicated on the back of CCD. SEE the box below : How to compute the specified voltages.</div> <div></div>

How to compute thespecified voltages



This indicates VRGL. This indicates VSUB.

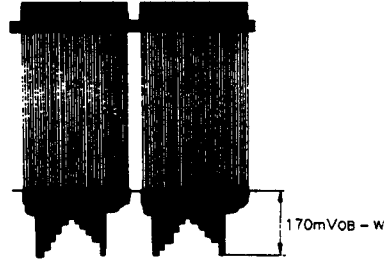

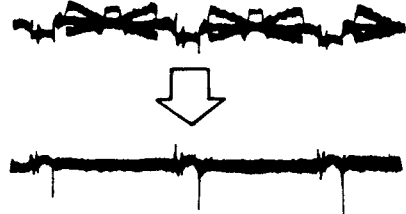
The mnemonics correspond to the actual values as follows :


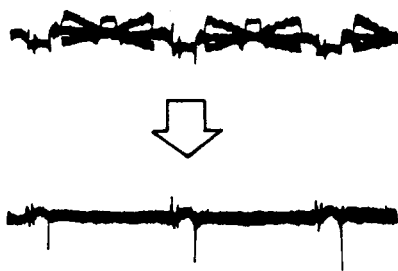
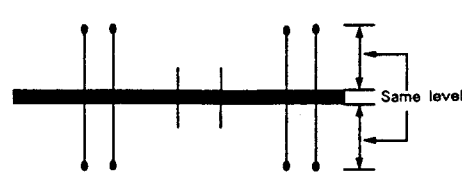
VRGL mnemonic	1	2	3	4	5	6	7
Actual value	1.0	1.5	2.0	2.5	3.0	3.5	4.0

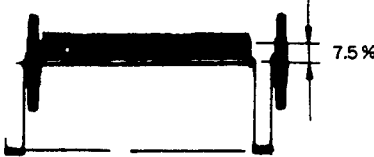
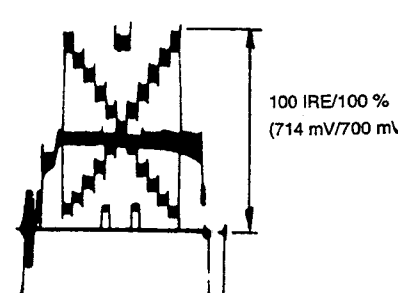
VSUB mnemonic	E	f	G	h	J	K	L	m	N	P	Q	R	S	T	U	V	W	X	Y	Z
Actual value	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0	16.5	17.0	17.5	18.0	18.5

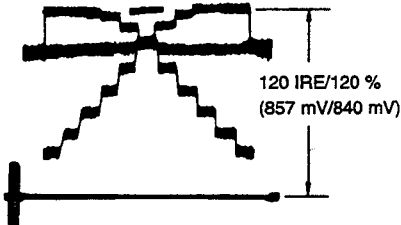
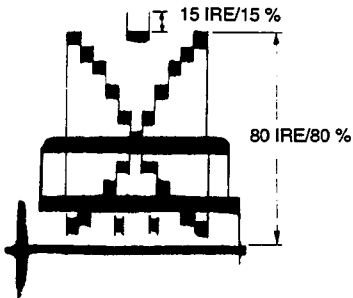
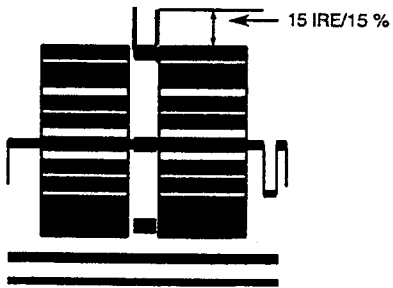
Example : "5L" means VRGL = 3.0V and VSUB = 12.0V

## 4. Adjusting the signal system

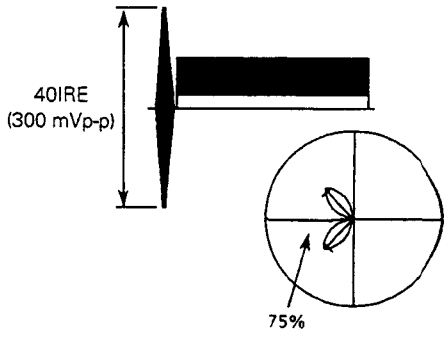
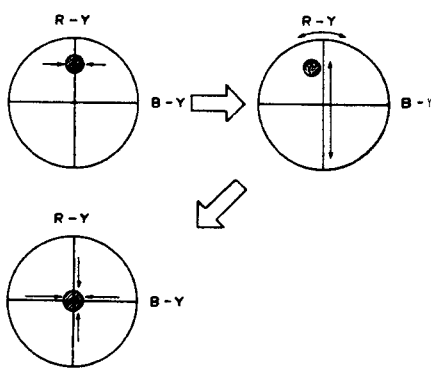
No.	Item	Instrument	Test point	Control	Procedure
1	MAX GAIN VOLTAGE adjustment	Digital voltmeter	TP - 1 (MAX GAIN) [CDS/TG board]	R5 (MAX GAIN) [CDS/TG board]	<ol style="list-style-type: none"> <li>1. Connect a digital voltmeter to TP - 1 (MAX GAIN).</li> <li>2. Set the voltage to 4.5V with R5 (MAX GAIN).</li> </ol>
2	IN DOOR W/B VOLTAGE adjustment	Digital voltmeter	TP-101 (R CTL) TP-102 (B CTL) [FEATURE board]	R141 (R CTL) R142 (B CTL) [FEATURE board]	<ol style="list-style-type: none"> <li>1. Connect a digital voltmeter to TP - 101 (R CTL).</li> <li>2. Set the TP - 101 voltage to 4.00V with R141 (R CTL).</li> <li>3. Connect the digital voltmeter to TP - 102 (B CTL).</li> <li>4. Set the TP - 102 voltage to 4.20V with R142 (B CTL).</li> </ol>
3	CCD OUT adjustment	Oscilloscope, Gray scale	TP - 1 (CCD OUT) [IMEGER board]	Lens iris	<ol style="list-style-type: none"> <li>1. Connect an oscilloscope to TP - 1 (CCD OUT).</li> <li>2. Set the CCD OUT to 170mVp-p (TK-1280), 200 mVp-p (TK1180) with the lens iris VR.</li> </ol> 
4	0dB GAIN adjustment	Oscilloscope, Gray scale	TP - 3 (Y out) [CDS/TG board]	R8 (0dB GAIN) [CDS/TG board]	<p>● CCD OUT: 170mV (TK-1280), 200mV (TK-1180)</p> <ol style="list-style-type: none"> <li>1. Connect an oscilloscope to TP - 3 (Y OUT).</li> <li>2. Adjust the voltage to 200mV with R8 (0dB GAIN).</li> </ol> 
5	DL YH GAIN adjustment	Oscilloscope, Gray scale	TP - 1 (Y1 - Y0) [MAT/ENC board]	R46 (DL YH GAIN) [MAT/ENC board]	<p>● CCD OUT: 170mV (TK-1280), 200mV (TK-1180)</p> <ol style="list-style-type: none"> <li>1. Connect an oscilloscope to TP - 1 (Y1 - Y0).</li> <li>2. Use R46 (DL YH GAIN) to adjust the waveform so that it may become flat.</li> </ol> 

No.	Item	Instrument	Test point	Control	Procedure
6	C1 GAIN adjustment	Oscilloscope, Color bars	TP - 3 (B) [MAT/ENC board]	R8 (C1 GAIN) [MAT/ENC board]	<p>● CCD OUT: 340mV (TK-1280), 400mV (TK-1180)</p> <ol style="list-style-type: none"> <li>1. Connect an oscilloscope to TP - 3 (B).</li> <li>2. Match the YL level for each 1H with R8 (C1 GAIN).</li> </ol>  <p>Make A even with B.</p>
7	R GAIN, B GAIN adjustment	Oscilloscope, Gray scale	TP - 6 (R-YO) TP - 8 (B-YO) [MAT/ENC board]	R21 (R GAIN) R23 (B GAIN) [MAT/ENC board]	<p>● CCD OUT: 170mV (TK-1280), 200mV (TK-1180)</p> <ol style="list-style-type: none"> <li>1. Connect an oscilloscope to TP - 6 (R-YO).</li> <li>2. Use R GAIN VR (R21) to adjust the TP - 6 waveform so that it may become flat.</li> <li>3. Connect the oscilloscope to TP - 8 (B-YO).</li> <li>4. Use B GAIN VR (R23) to adjust the TP - 8 waveform so that it may become flat.</li> </ol> 
8	Y1, Y2 GAIN adjustment	Oscilloscope, Gray scale	TP - 2 (VAP) [MAT/ENC board]	R3 (Y1, Y2 GAIN) [MAT/ENC board]	<p>● CCD OUT: 170mV (TK-1280), 200mV (TK-1180)</p> <ol style="list-style-type: none"> <li>1. Connect an oscilloscope to TP - 2 (VAP).</li> <li>2. Match the overshoot and pre-shoot level with R3 (Y1, Y2 GAIN).</li> </ol> 

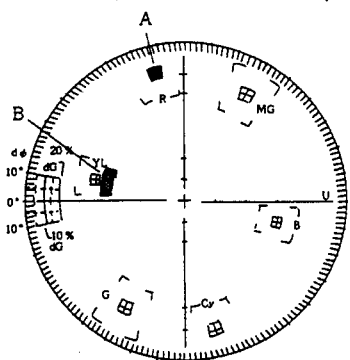
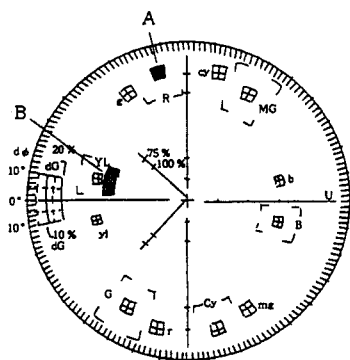
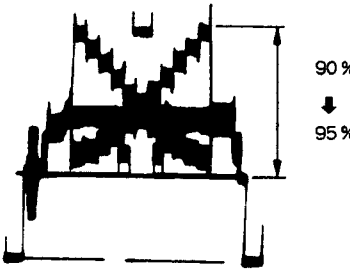
No.	Item	Instrument	Test point	Control	Procedure
9	R - Y1 GAIN adjustment	Oscilloscope, Color bars	TP - 6 (R - Y0) TP - 7 (R - Y1) [MAT/ENC board]	R77 (R - Y1 GAIN) [MAT/ENC board]	<p>● CCD OUT: 170mV (TK-1280), 200mV (TK-1180)</p> <ol style="list-style-type: none"> <li>1. Connect the oscilloscope 1CH to TP - 6 (R - Y0).</li> <li>2. Connect the oscilloscope 2CH to TP - 7 (R - Y1).</li> <li>3. Invert the 2CH waveform and add to 1CH.</li> <li>4. Use R77 (R - Y1 GAIN) to adjust the waveform so that it may become flat.</li> </ol>
10	B - Y1 GAIN adjustment	Oscilloscope, Color bars	TP - 8 (B - Y0) TP - 9 (B - Y1) [MAT/ENC board]	R85 (B - Y1 GAIN) [MAT/ENC board]	<p>● CCD OUT: 170mV (TK-1280), 200mV (TK-1180)</p> <ol style="list-style-type: none"> <li>1. Connect the oscilloscope 1CH to TP - 8 (B - Y0).</li> <li>2. Connect the oscilloscope 2CH to TP - 9 (B - Y1).</li> <li>3. Invert the 2CH waveform and add to 1CH.</li> <li>4. Use R85 (B - Y1 GAIN) to adjust the waveform so that it may become flat.</li> </ol>
11	Y SET UP adjustment	Oscilloscope	VIDEO OUT	R114 (Y SET UP) [MAT/ENC board]	<p>● IRIS : CLOSED</p> <ol style="list-style-type: none"> <li>1. Connect a waveform monitor or oscilloscope to the video output.</li> <li>2. Adjust Y SET UP to 53.5 mV (NTSC) / 52.5 mV (PAL) with R114 (Y SET UP). (Waveform monitor : 7.5 IRE/7.5 %)</li> </ol> 
12	Y GAIN adjustment	Waveform monitor or Oscilloscope, Gray scale	VIDEO OUT	R111 (Y GAIN) [MAT/ENC board]	<p>● CCD OUT: 170mV (TK-1280), 200mV (TK-1180)</p> <ol style="list-style-type: none"> <li>1. Connect a waveform monitor or oscilloscope to the video output.</li> <li>2. Reset the Y KNEE.</li> <li>3. Adjust the video output to 714 mV (NTSC) / 700 mV (PAL) with R111 (Y GAIN). (Waveform monitor : 100 IRE/100 %)</li> <li>4. Y KNEE adjustment.</li> </ol> 

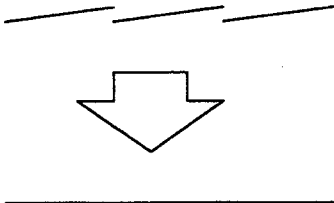
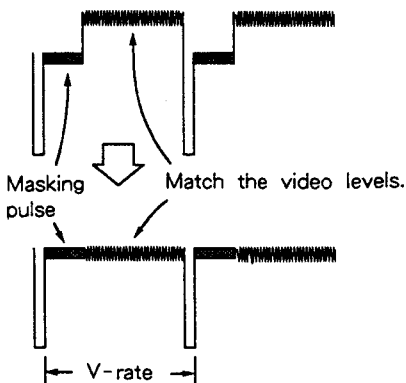
No.	Item	Instrument	Test point	Control	Procedure
13	Y KNEE adjustment	Waveform monitor or Oscilloscope	VIDEO OUT	R181 (Y KNEE) [MAT/ENC board]	<p>● IRIS : OPEN</p> <ol style="list-style-type: none"> <li>1. Connect a waveform monitor or oscilloscope to the video output.</li> <li>2. Adjust the white peak to 857 mV (NTSC) / 840 mV (PAL) with R181 (Y KNEE). (Waveform monitor : 120 IRE/120 %)</li> </ol> 
14	AP LEVEL adjustment	Waveform monitor or Oscilloscope,  Gray scale	VIDEO OUT	R107 (APL) [MAT/ENC board]	<p>● VIDEO OUT : 80 IRE/80 %</p> <ol style="list-style-type: none"> <li>1. Connect a waveform monitor or oscilloscope to the video output.</li> <li>2. Make sure the focus is correct.</li> <li>3. Adjust the overshoot of the white peak at the gray scale center to 10mV with R107 (APL). (Waveform monitor : 15 IRE/15 %)</li> </ol> 
15	V CONTOUR adjustment	Waveform monitor or Oscilloscope,  Gray scale	VIDEO OUT	R43 (VAP) [MAT/ENC board]	<p>● VIDEO OUT : 80 IRE/80 %</p> <ol style="list-style-type: none"> <li>1. Connect a waveform monitor or oscilloscope to the video output.</li> <li>2. Make sure the focus is correct.</li> <li>3. Adjust the overshoot of the white peak at the gray scale center to 10mV with R43 (VAP). (Waveform monitor : 15 IRE/15 %)</li> </ol> 



No.	Item	Instrument	Test point	Control	Procedure
16	BURST LEVEL adjustment	Waveform monitor, Vectorscope, or Oscilloscope	VIDEO OUT	R102 (BURST LEVEL) [MAT/ENC board]	<p>● IRIS : CLOSED</p> <ol style="list-style-type: none"> <li>1. Connect a waveform monitor, vectorscope, or oscilloscope to the video output.</li> <li>2. Adjust the burst to 286 mV (NTSC) / 300 mV (PAL) with R102 (BURST LEVEL). (Vectorscope : 75 %)</li> </ol> 
17	CARRIER BALANCE adjustment	Vectorscope	VIDEO OUT	R92 (R-Y) R93 (B-Y) [MAT/ENC board]	<p>● IRIS : CLOSED</p> <ol style="list-style-type: none"> <li>1. Connect a vectorscope to the video output.</li> <li>2. Use R92 (R-Y) and R93 (B-Y) to adjust the carrier balance so that it may come to the vectorscope center.</li> </ol> 

No.	Item	Instrument	Test point	Control	Procedure
18	AUTO W/B adjustment	Vectorscope, Gray scale, C10 + C8 filter, W4 + W2 filter, CC - 12G filter	VIDEO OUT	R203 (A WB R) R202 (A WB B) [FEATURE board]	<p>● VIDEO OUT : 100 %</p> <ol style="list-style-type: none"> <li>1. Use R203 (A WB R) and R202 (A WB B) to adjust a rosette of the vectorscope so that it may come to the center.</li> <li>2. Set the white balance SW to AUTO.</li> <li>3. Use R203 (A WB R) and R202 (A WB B) to adjust a rosette of the vectorscope so that it may come to the center.</li> <li>4. Apply each of the C10 + C8, W4 + W2, CC - 12G filters and check a white balance is established. (If not, adjust the white balance with R21 (R GAIN) and R23 (B GAIN).</li> <li>5. Reset the white balance SW to IN DOOR.</li> </ol>
19	IN DOOR W/B adjustment	Vectorscope, Gray scale	VIDEO OUT	R21 (R GAIN) R23 (B GAIN) [MAT/ENC board]	<p>● VIDEO OUT : 100 %</p> <ol style="list-style-type: none"> <li>1. Connect a vectorscope to the video output.</li> <li>2. Use R141 (RCTL) and R142 (BCTL) to adjust a rosette of the vectorscope so that it may come to the center.</li> </ol>
20	MANU, white balance circuit adjustment	Oscilloscope, Gray scale, C12 filter	VIDEO OUT	R136 (G - Mg) R122 (R - B) R127 (R OFFSET) R130 (R GAIN) [FEATURE board]	<p>● VIDEO OUT : 100 %</p> <ol style="list-style-type: none"> <li>1. Connect a waveform monitor, vectorscope to the video output.</li> <li>2. Set the white balance SW to MANUAL.</li> <li>3. Set R136 (G - Mg) to the center.</li> <li>4. Shoot the gray scale under the 3200°K light source.</li> <li>5. Adjust the white balance with R122 (R - B) and R127 (R OFFSET).</li> <li>6. Fit a C12 filter and shoot the gray scale.</li> <li>7. Adjust the white balance with R122 (R - B) and R130 (R GAIN)</li> <li>8. Repeat steps 4 to 7 once or twice more.</li> <li>9. Reset the white balance SW to IN DOOR.</li> </ol>


No.	Item	Instrument	Test point	Control	Procedure
21	Colour repeatability adjustment	Vectorscope,  Colour bars	Video out	R55 (R - Y HUE) R54 (B - Y HUE) R51 (R - Y GAIN) R53 (B - Y GAIN) [MAT/ENC board]	<p>● VIDEO OUT :100 IRE/100%</p> <ol style="list-style-type: none"> <li>1. Connect a vectorscope to the video output.</li> <li>2. Adjust the R axis to a required position A with R55 (R - Y HUE).</li> <li>3. Adjust the YL axis to a required position B with R54 (B - Y HUE).</li> <li>4. Adjust the R saturation to a specified position with R51 (R - Y GAIN).</li> <li>5. Adjust the YL saturation to a specified position with R53 (B - Y GAIN).</li> </ol>
<div style="display: flex; justify-content: space-around; align-items: center;">   </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <p>NTSC</p> <p>PAL</p> </div>					
22	AGC SET adjustment	Waveform monitor or Oscilloscope,  Gray scale	VIDEO OUT	R14 (AGC SET) [CDS/TG board]	<p>● VIDEO OUT : 90 IRE/90%</p> <ol style="list-style-type: none"> <li>1. Connect a waveform monitor or oscilloscope to the video output.</li> <li>2. Turn the AGC SW to ON and adjust the output to 95 IRE/95 % with R14 (AGC SET).</li> </ol>
					

No.	Item	Instrument	Test point	Control	Procedure
23	CCD - IRIS offset adjustment	Oscilloscope,	TP - 301 (CCD IRIS) [FEATURE board]	R310 (CCD IRIS) [FEATURE board]	<p>● IRIS : CLOSED</p> <ol style="list-style-type: none"> <li>1. Connect an oscilloscope to TP - 301 (CCD IRIS). (5ms/div, 0.2V/div DC)</li> <li>2. Use R310 (CCD IRIS) to adjust the TP - 301 (CCD IRIS) so that it may become flat.</li> </ol> 
24	IRIS LEVEL SUB - VR adjustment	Waveform monitor or Oscilloscope,  Gray scale	VIDEO OUT	R22 (IRIS LEVEL) [CDS/TG board]	<ol style="list-style-type: none"> <li>1. Connect a waveform monitor or oscilloscope to the video output.</li> <li>2. Shoot the gray scale cross point at 70 to 100 IRE/100 %.</li> <li>3. Set the SHUTTER mode SW to "CCD - IRIS" position.</li> <li>4. Adjust the gray scale to 100 IRE/100 % with R22 (IRIS LEVEL). (NTSC : 714mV, PAL : 700mV)</li> </ol>
25	GALVANO-METRIC AE LENS DRIVE CIRCUIT adjustment	Oscilloscope,  White pattern,  Galvanometric AE lens	VIDEO OUT or TP - 4 [CDS/TG board]	R116 (ALC) R113 (GAIN) [FEATURE board]	<ol style="list-style-type: none"> <li>1. Fit a galvanometric AE lens.</li> <li>2. Turn ON the BLC switch.</li> <li>3. Connect a waveform monitor or oscilloscope to the video output.</li> <li>4. Connect the oscilloscope to the auto iris terminal output. (V - rate 200 mV/div.)</li> <li>5. Set R116 (ALC) to the center.</li> <li>6. Make the auto iris terminal output level flat with R113 (GAIN). (Match the video level with the masking pulse level.)</li> </ol> 

# STANDARD CIRCUIT DIAGRAMS AND BOARDS

## ■NOTE ON USING CIRCUIT DIAGRAMS


### 1.SAFETY

The components identified by the  symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

### 2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

#### (1)Camera head

- Illumination :Illumination condition during standard adjustment
- Object :JVC Gray scale pattern ( $\gamma = 2.2$ , 11steps)
- Iris :Set the VIDEO OUT wave form level to 714mV<sub>PD-WP</sub> (AGC OFF) with IRIS switch (at the lens side)
- Switch :AGC = OFF  
SHUTTER = NORM  
WHITE BALANCE =  (AUTO)



(2)Voltage values :All DC voltage values

(3)Waveform :Usually a probe of 10:1 is used

### 3.INDICATION OF PARTS SYMBOL[EXAMPLE]

- In the PW board:CAS-1502A  
R1001→R1 or R01  
C1023→C23
- Module PW board:CAS-A502A  
ICA001→IC1  
QA023→Q23

### 4.COLOR OF P.C.BOARD PATTEN

-  :Top side  
 :Bottom side

### 5.INDICATIONS ON THE CIRCUIT DIAGRAM

#### (1)Resistors

- Resistance value
  - No unit :[ $\Omega$ ]
  - K :[K $\Omega$ ]
  - M :[M $\Omega$ ]
- Rated allowable power
  - No indication :1/10[W]
  - Others :As specified
- Type
  - No indication :Carbon resistor or Chip resistor
  - OMR :Oxide metal film resistor
  - FR :Fusible resistor


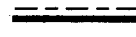

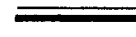

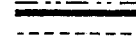



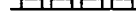
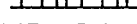
#### (2)Capacitors

- Capacitance value
  - 1or higher :[pF]
  - less than 1 :[ $\mu$ F]
- Withstand voltage
  - No indication :DC50[V]
  - Others :DC withstand voltage[V]
  - AC indicated :AC withstand voltage[V]
- Electrolytic Capacitors
  - 47/50[Example]:Capacitance value[ $\mu$ F]/withstand voltage[V]
- Type
  - No indication :Ceramic capacitor
  - MY :Mylar capacitor
  - PP :Polypropylene capacitor
  - TF :Thin film capacitor
  - BP :Bipolar electrolytic capacitor
  - TAN :Tantalum capacitor

#### (3)Coils

- No unit :[ $\mu$ H]
- Others :As specified

#### (4)Power Supply

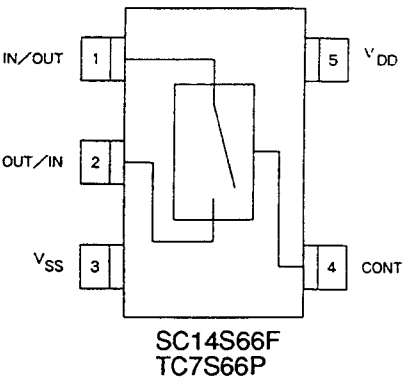
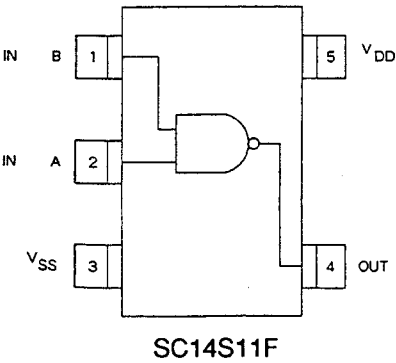
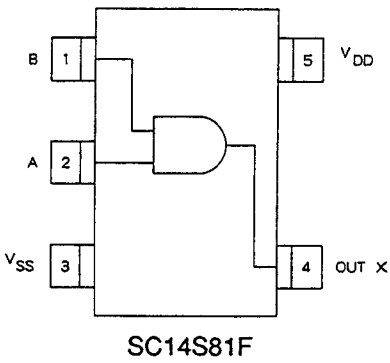
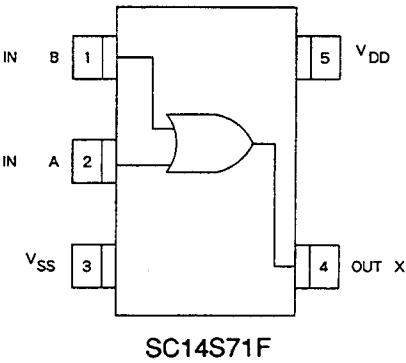
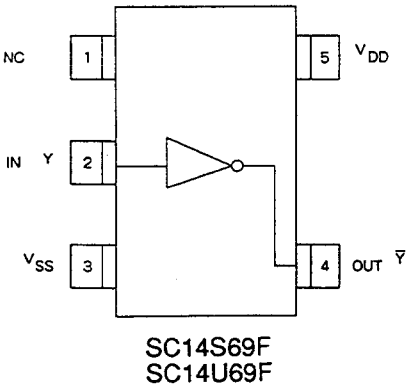
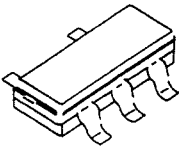
- |   |         |   |       |
|---|---------|---|-------|
|  | : +15V  |  | -10V  |
|  | : +12V  |  | -25V  |
|  | : +9.5V |  | AC24V |
|  | : +8.5V |  | +17V  |
|  | : +7V   |   |       |
|  | : +5V   |   |       |
|  | : -9V   |   |       |

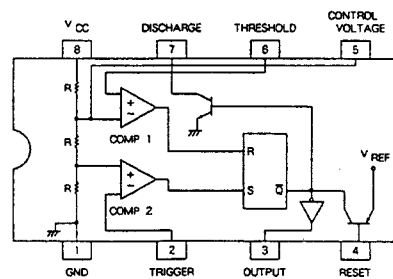
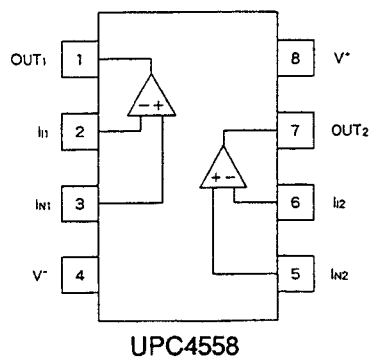
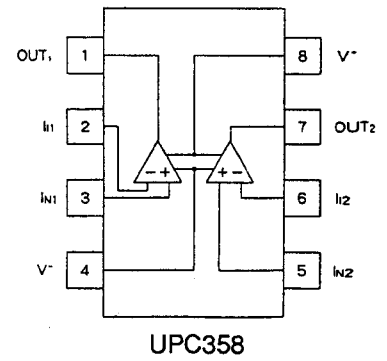
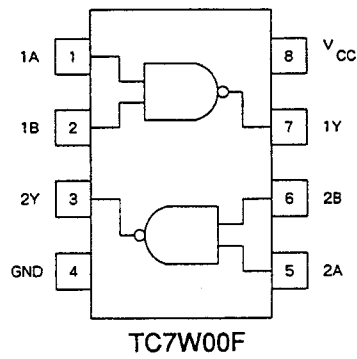
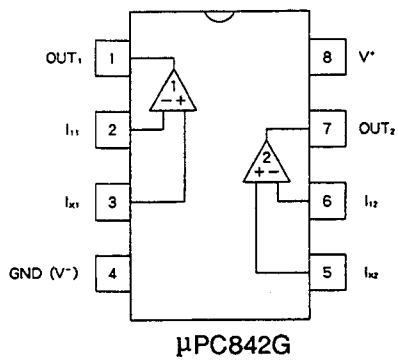
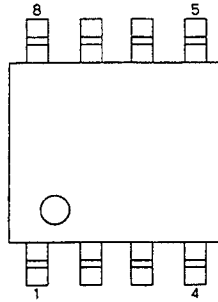
#### (5)Test Point

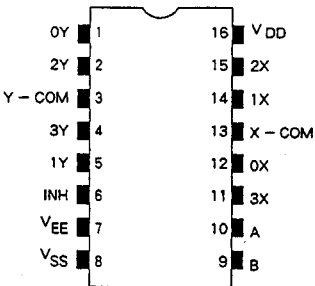
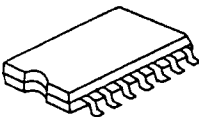


◇ Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

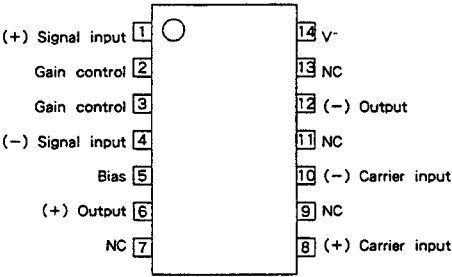
PIN ARRANGMENTS OF ICs AND TRANSISTORS



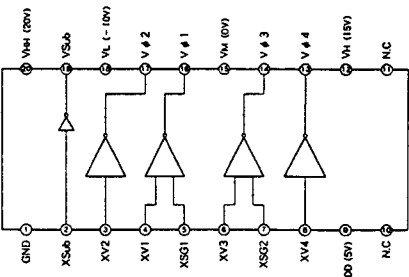




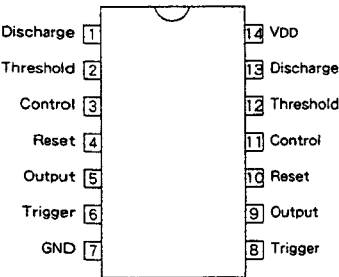
TC4052BF



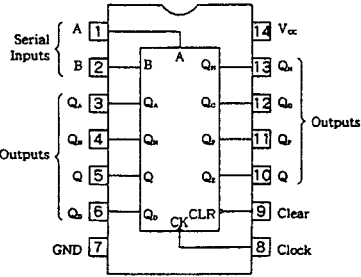
NJM1496M



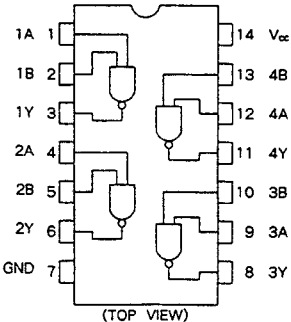
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MP-D55566

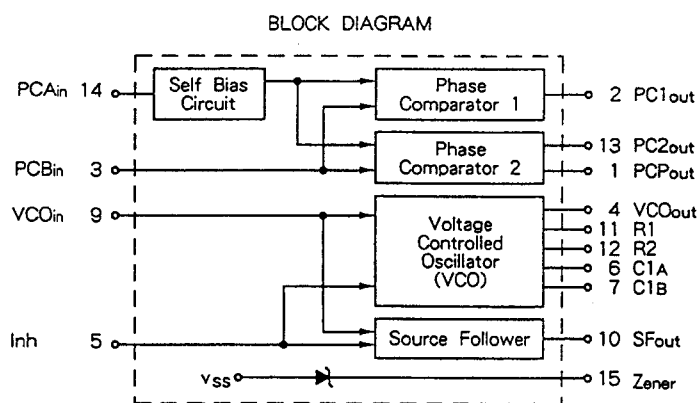


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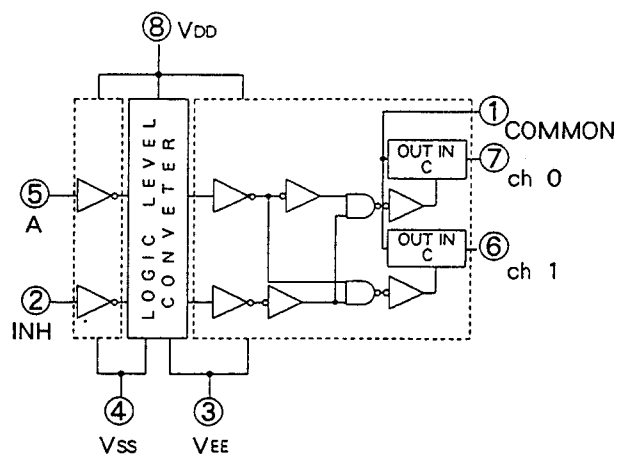


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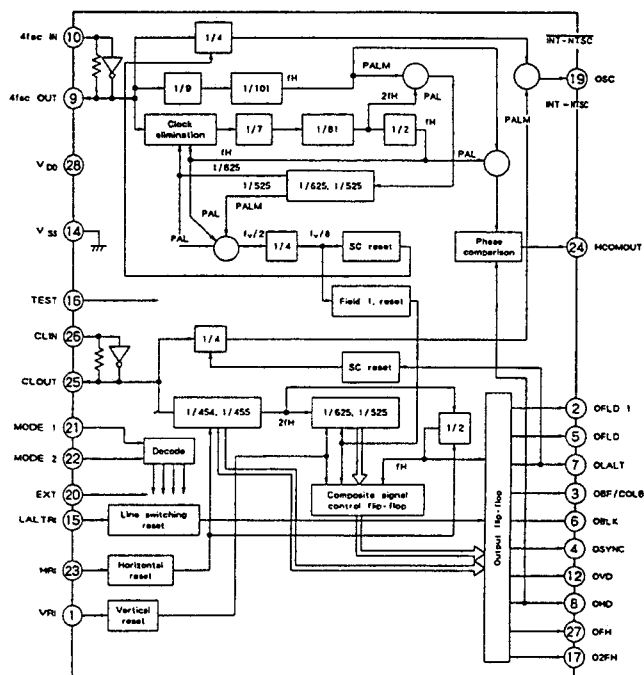




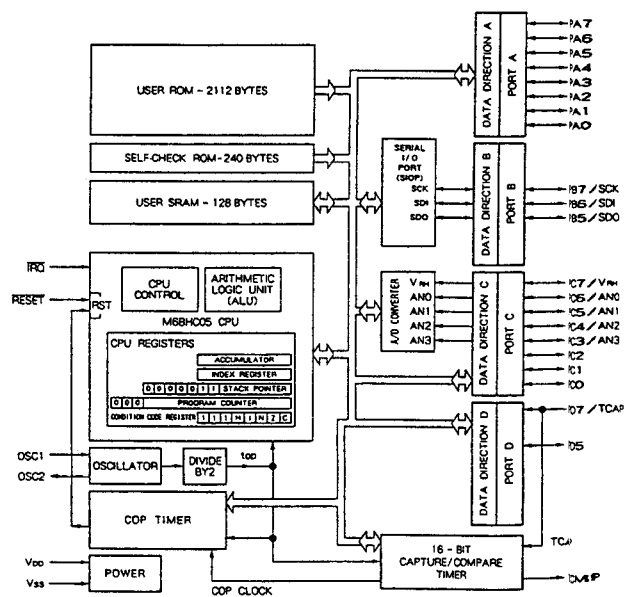
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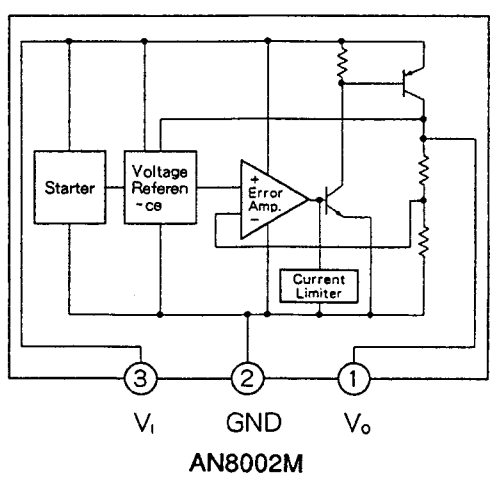
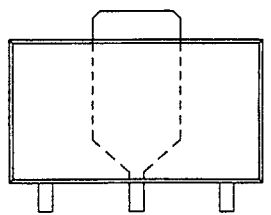
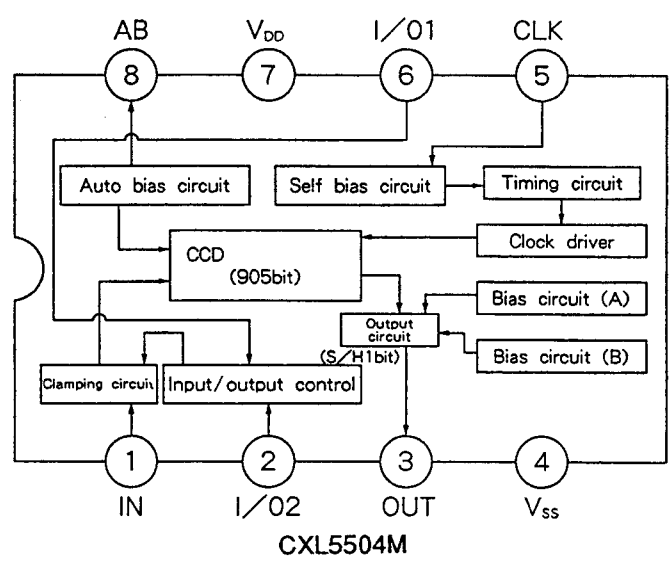
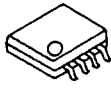
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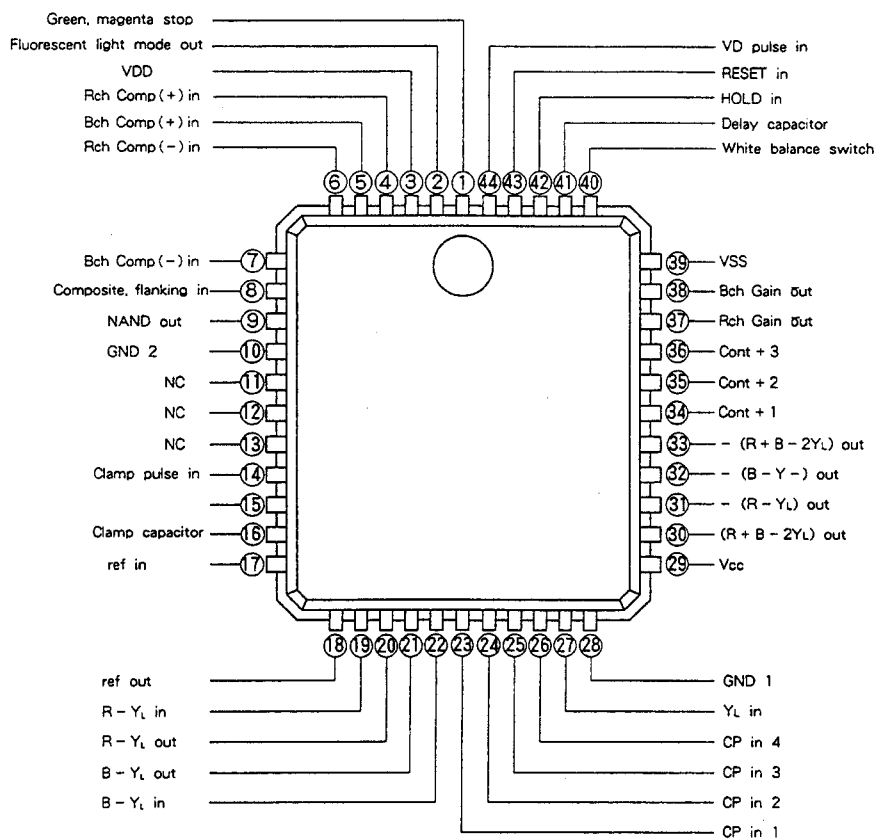


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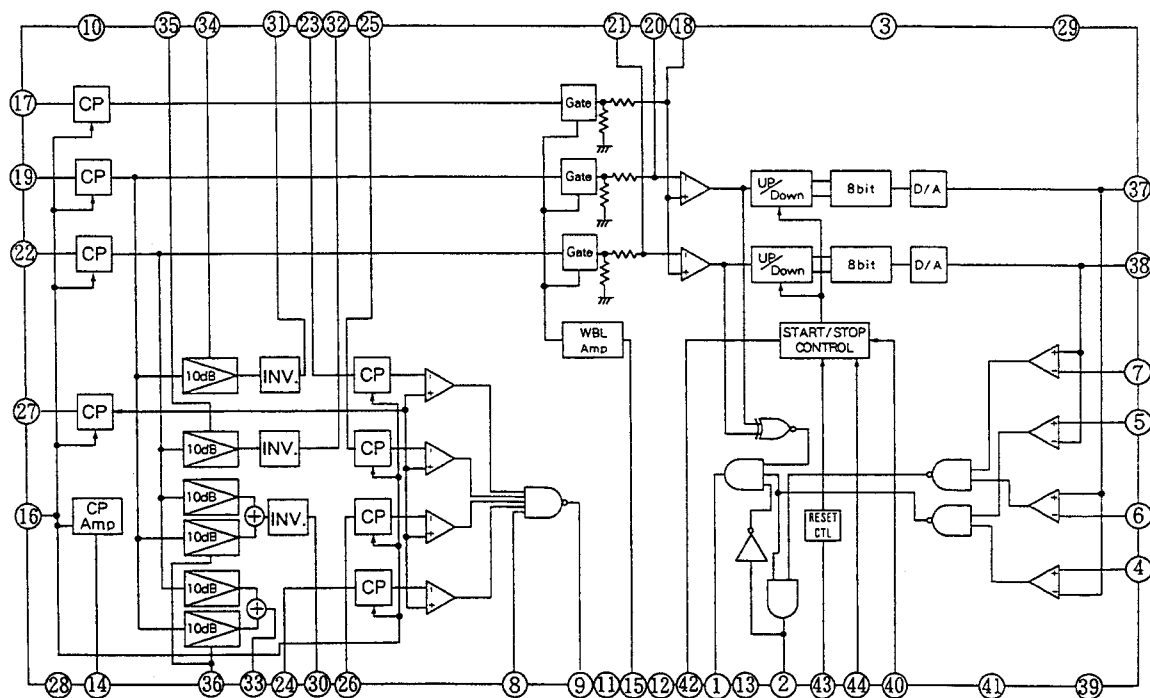


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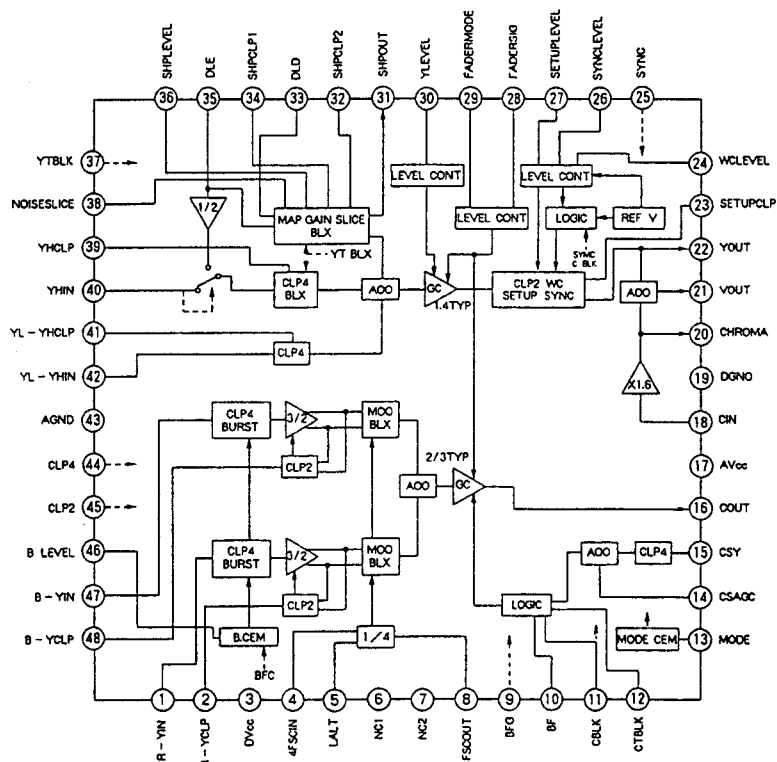
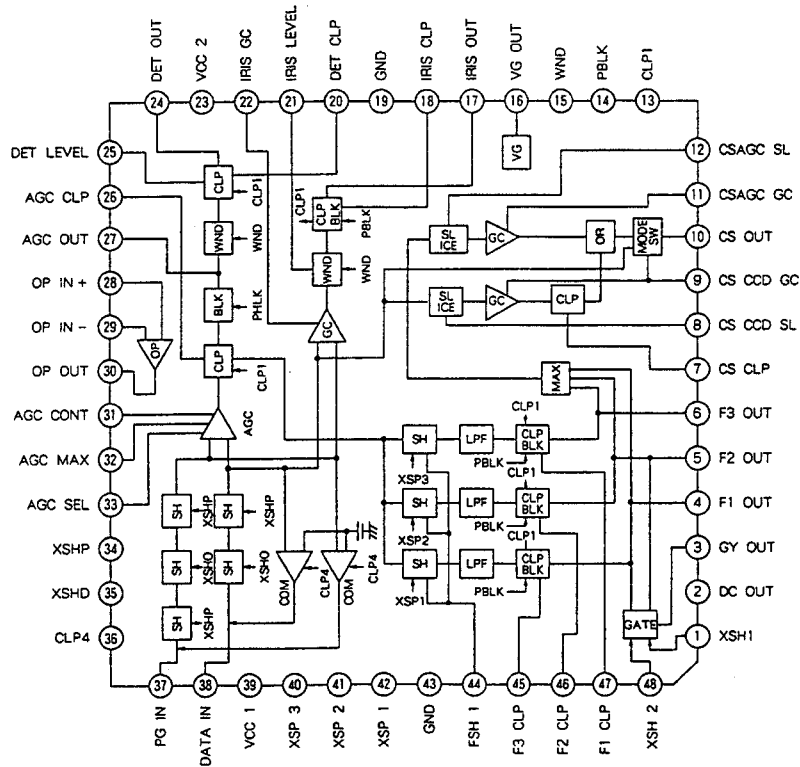
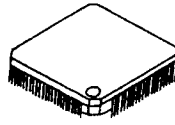


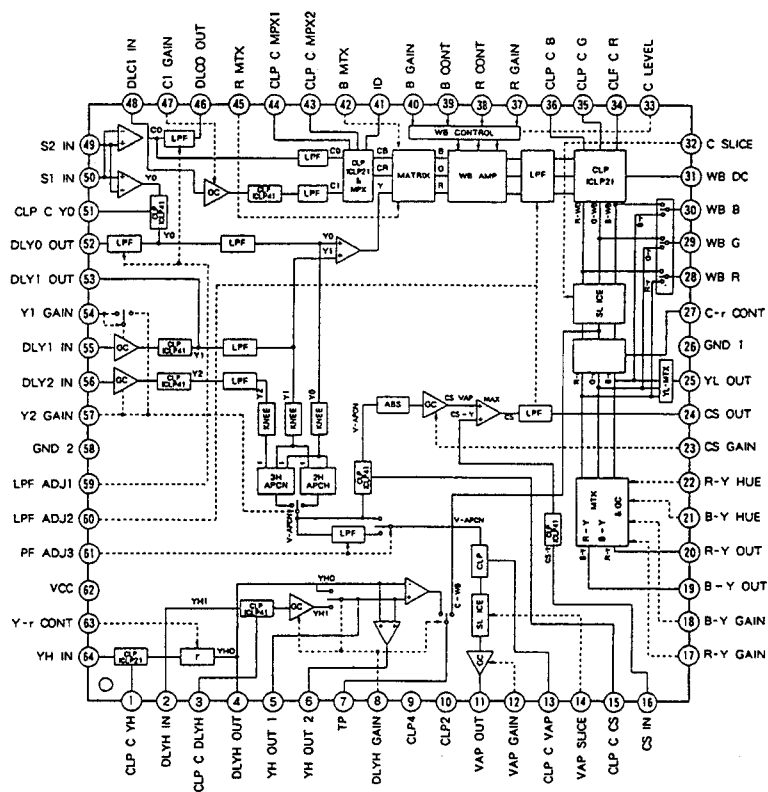


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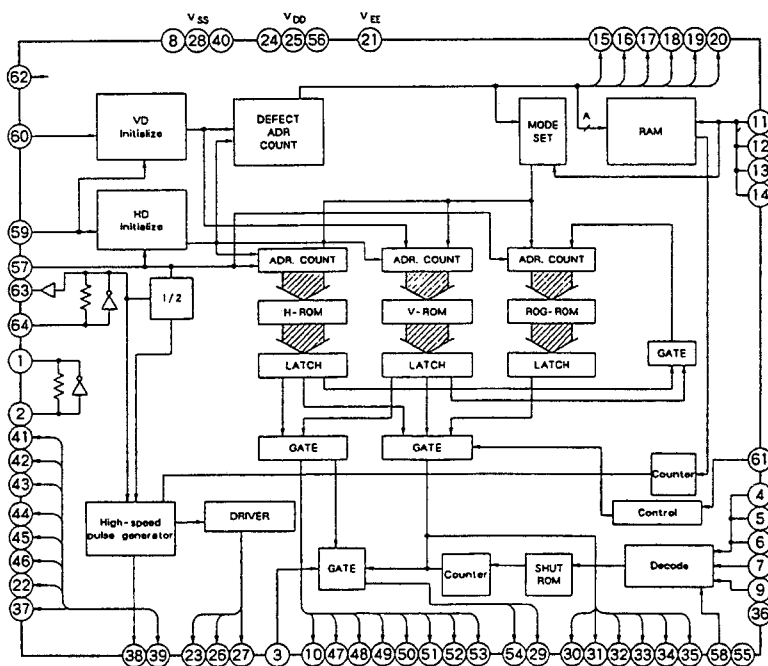


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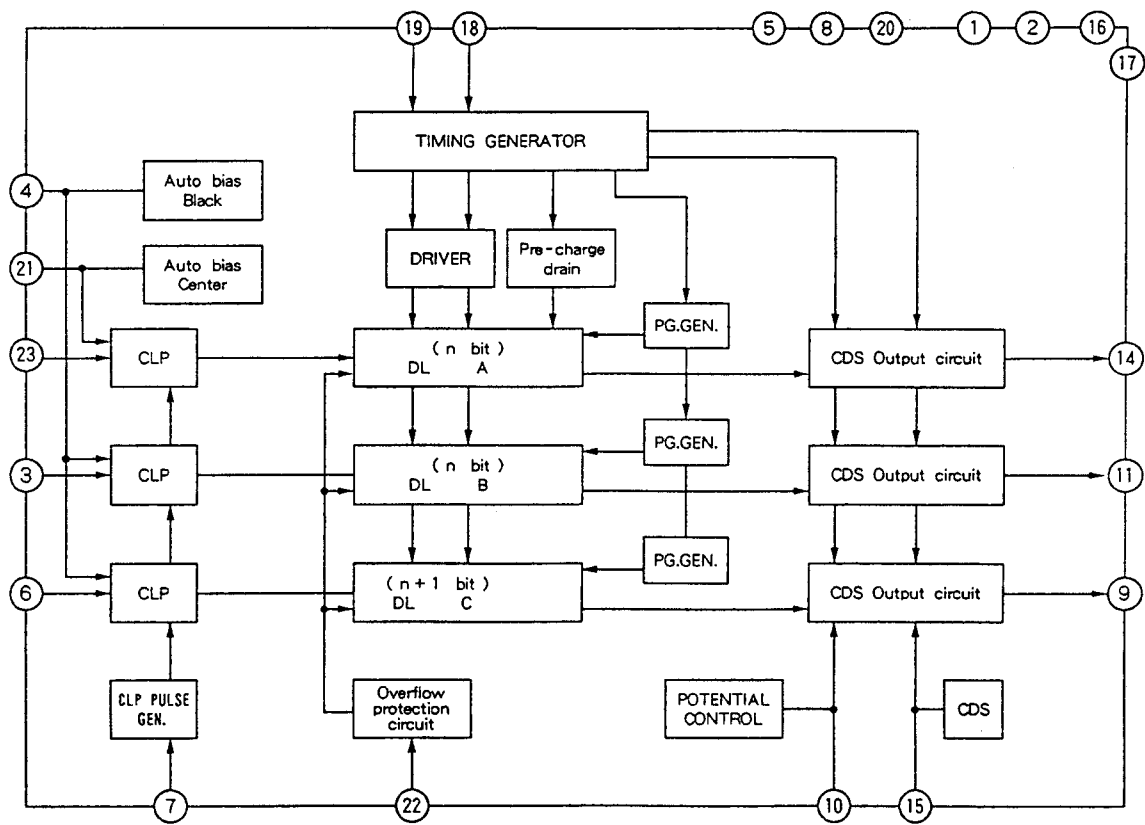
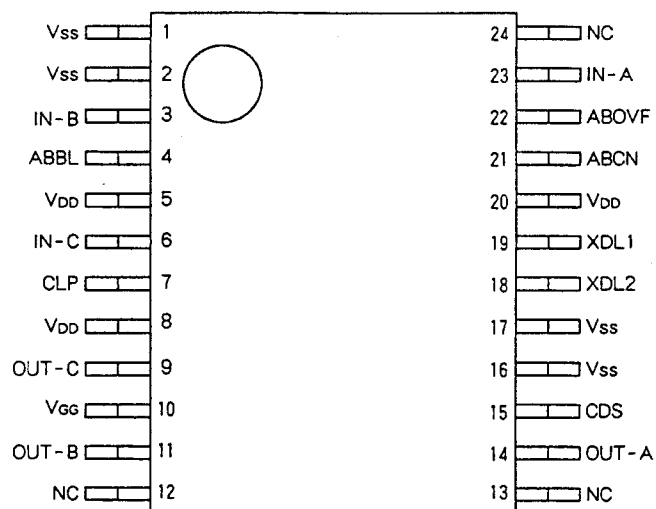




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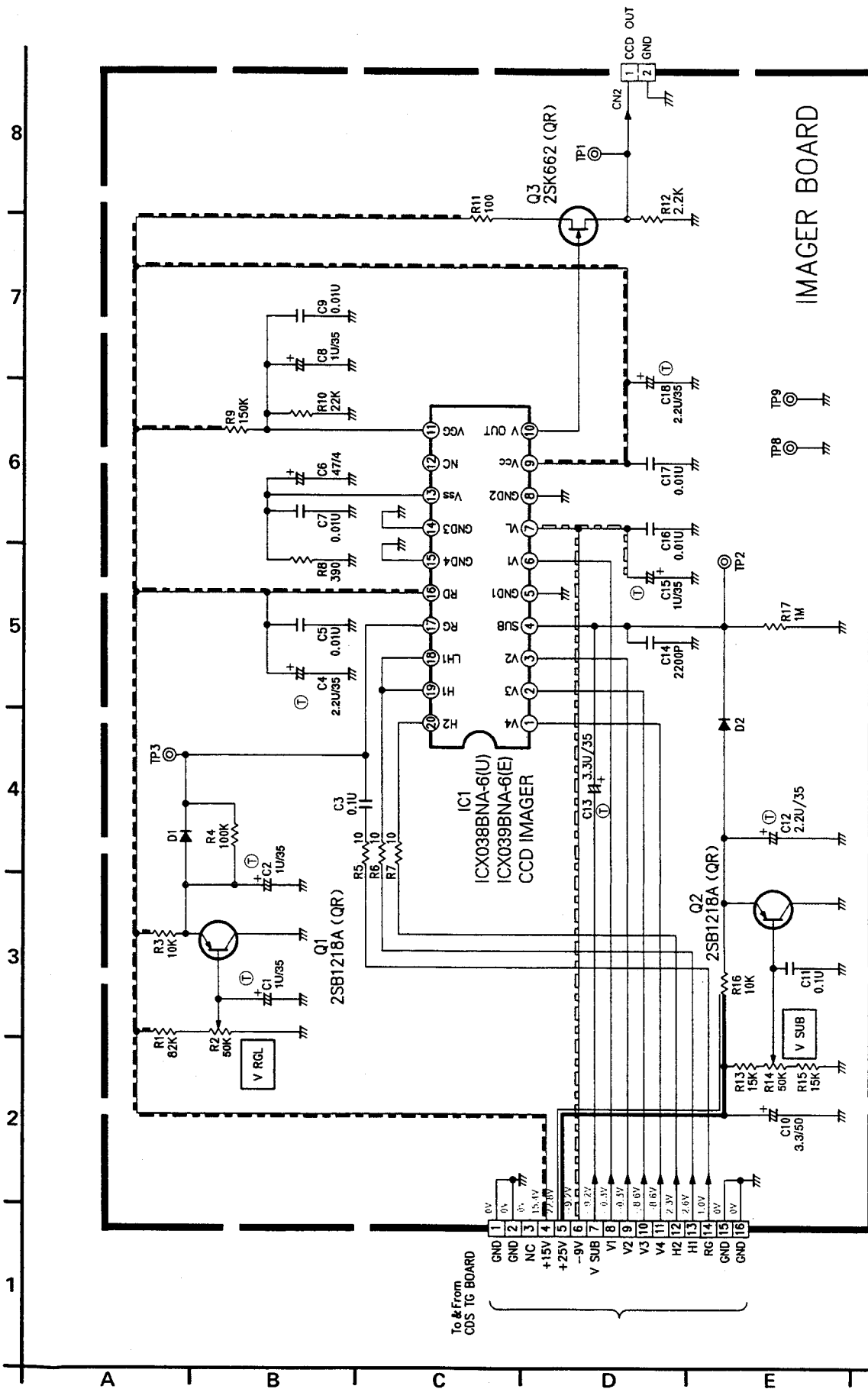


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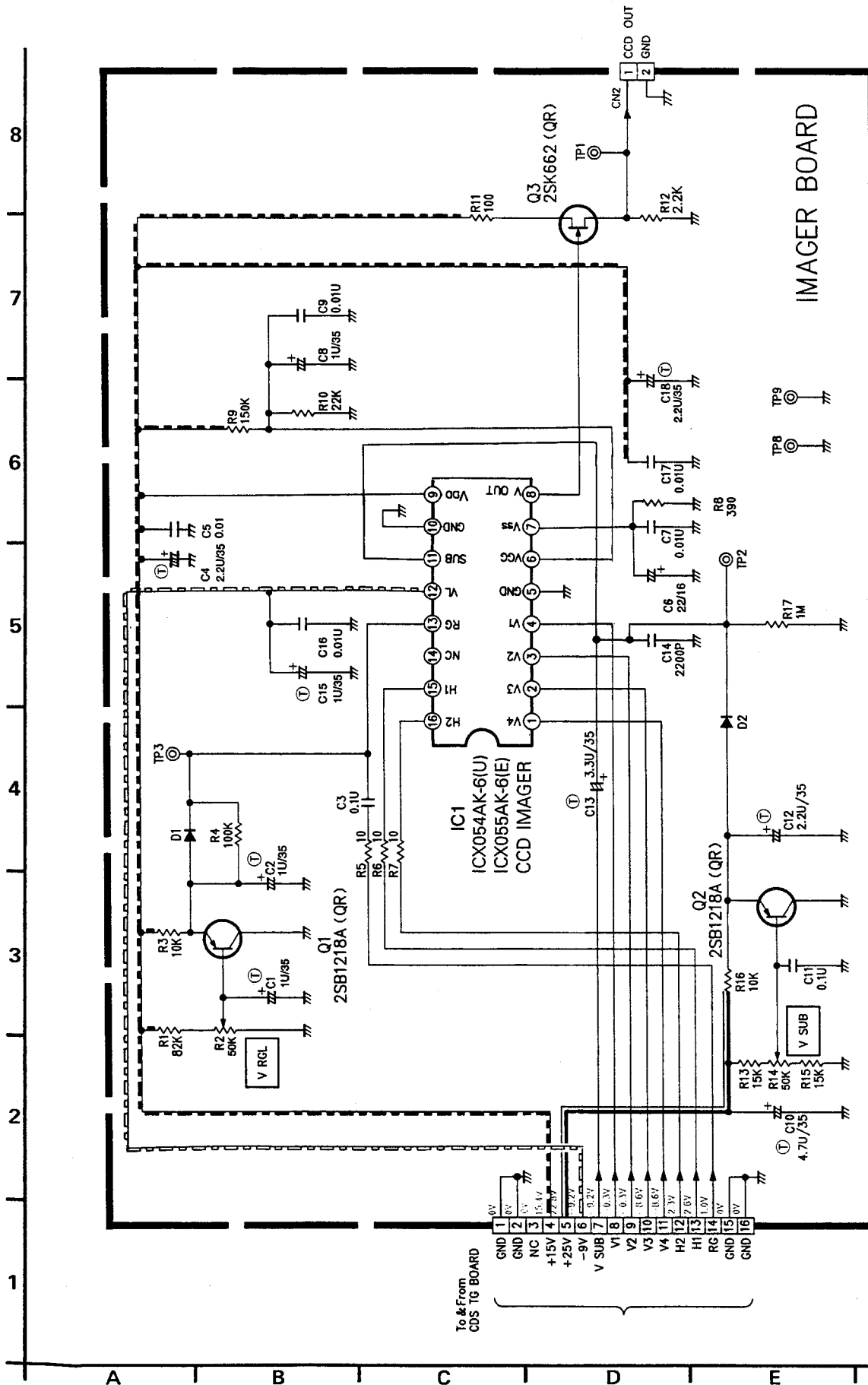


CX1517N

# IMAGER BOARD CIRCUIT DIAGRAM (TK-1280/1281)



## IMAGER BOARD CIRCUIT DIAGRAM (TK-1180)

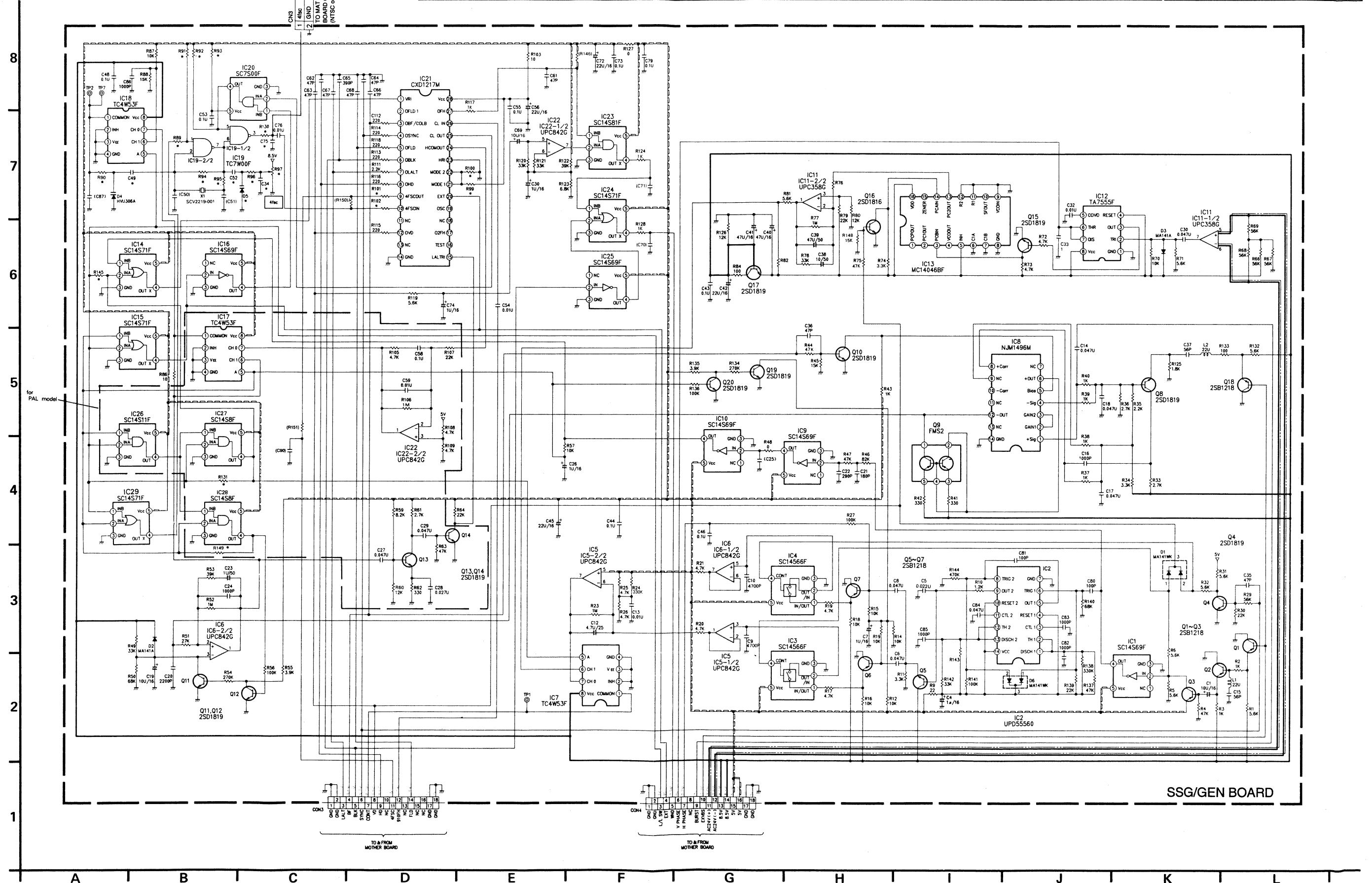






## SSG/GENLOCK BOARD CIRCUIT DIAGRAM

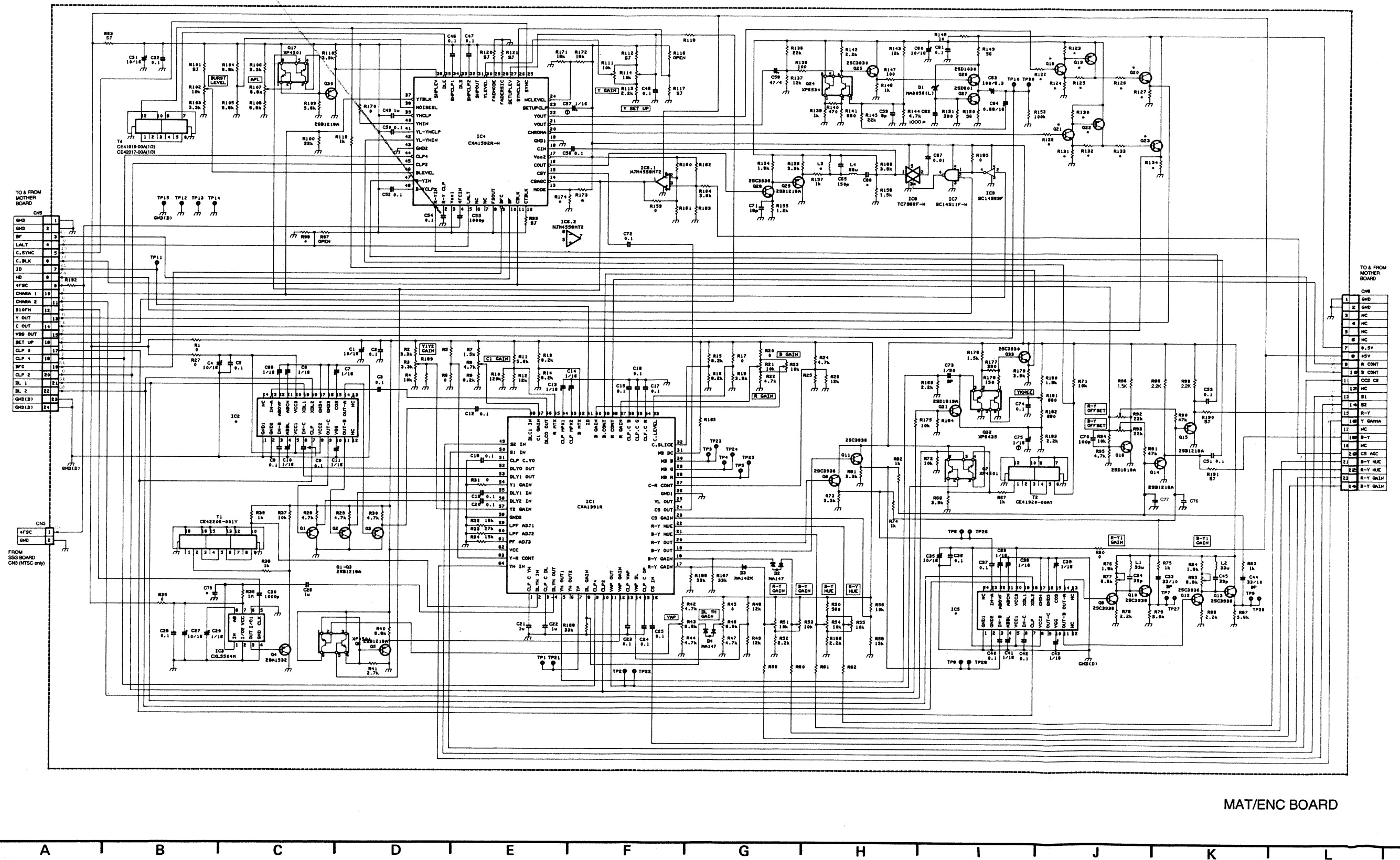
	IC29	D5	R87	R88	R89	R90	R91	R92	R93	R94	R95	R96	R97	R99	R100	R101	R102	R130	R131	R145	R149	C9	C10	C26	C34	C49	C52	C75	C86	X1
TK-1280JAPAN/U/TK-1180U	SC14S71F	HVU306A	10K	10K	SHORT	100K	—	—	150	1M	100	100K	10K	—	SHORT	—	—	1K	SHORT	—	SHORT	4700P	4700P	SHORT	0.01	33P	1000P	220K	1000P	14.31818MHz
TK-1280E/TK-1180E/TK-1281EG	—	HVU306A	10K	10K	—	100K	SHORT	SHORT	56	1M	220	100K	10K	SHORT	—	SHORT	SHORT	150	—	—	—	0.01	0.01	1/16	0.01	27P	1000P	100P	1000P	17.734475MHz



# MAT/ENC BOARD CIRCUIT DIAGRAM

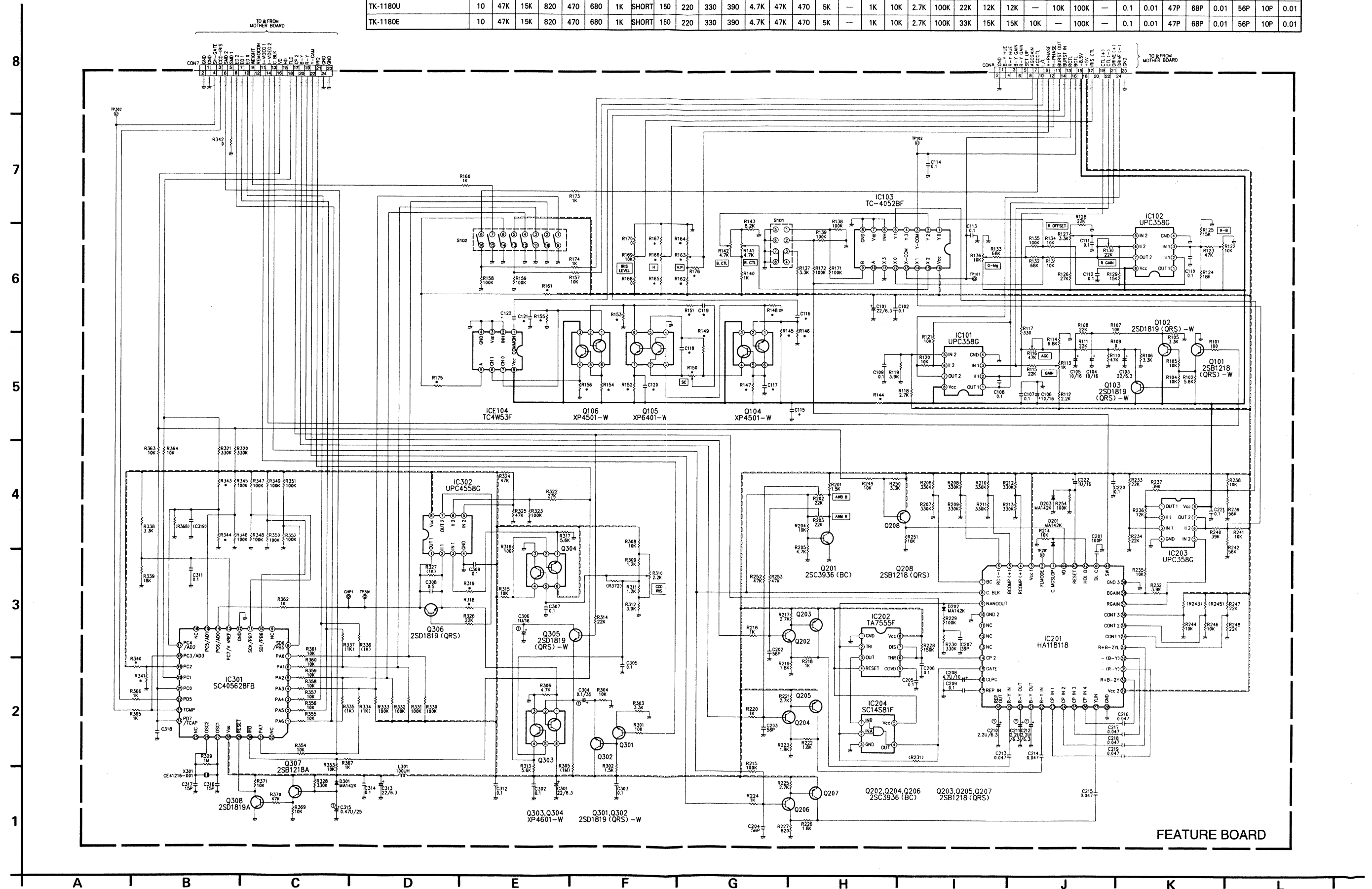
C54 ROT LAUFT WEG  
TERMO

	IC2	IC5	L3	C66	R98	R173	R174	Q18	Q19	Q20,23	Q21	Q22	R122	R123	R124	R125	R126	R127	R129	R130	R131	R132	R133	R134	CN3	C78	C76	C77
TK-1280JAPAN/U	CXL1517N	CXL1517N	15 $\mu$	33P	SHORT	—	SHORT	2SC3930(ABC)	2SA1532(ABC)	2SD1030(RS)	2SC3936(BC)	2SB1218A(QR)	100	2.7K	1.2K	1.2K	100	5.6K	100	2.7K	1.2K	1.2K	100	3.9K	USED	—	—	—
TK-1280E/TK-1281EG	CXL1517N	CXL1517N	8.2 $\mu$	18P	—	SHORT	—	2SC3930(ABC)	2SA1532(ABC)	2SD1030(RS)	2SC3936(BC)	2SB1218A(QR)	100	2.7K	1.2K	1.2K	100	5.6K	100	2.7K	1.2K	1.2K	100	3.9K	NOT USED	—	—	—
TK-1180U	CXL1518N	CXL1518N	15 $\mu$	33P	SHORT	—	SHORT	—	—	2SD1030(RS)	2SC3936(BC)	2SB1218A(QR)	—	—	—	—	—	—	100	2.7K	1.2K	1.2K	100	3.9K	USED	—	—	—
TK-1180E	CXL1518N	CXL1518N	8.2 $\mu$	18P	—	SHORT	—	—	—	2SD1030(RS)	2SC3936(BC)	2SB1218A(QR)	—	—	—	—	—	—	100	2.7K	1.2K	1.2K	100	3.9K	USED	39P	220P	220P

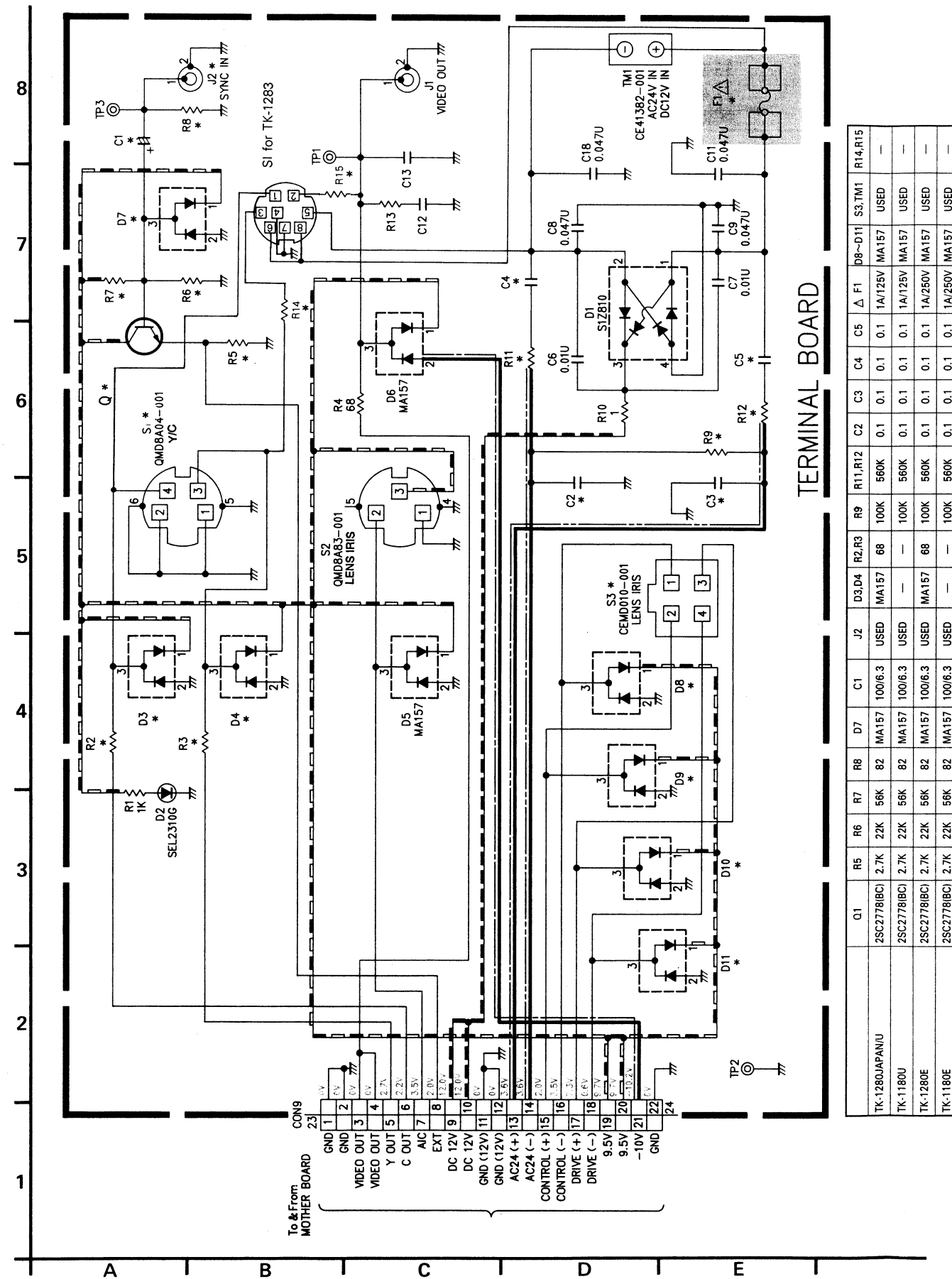


## FEATURE BOARD CIRCUIT DIAGRAM

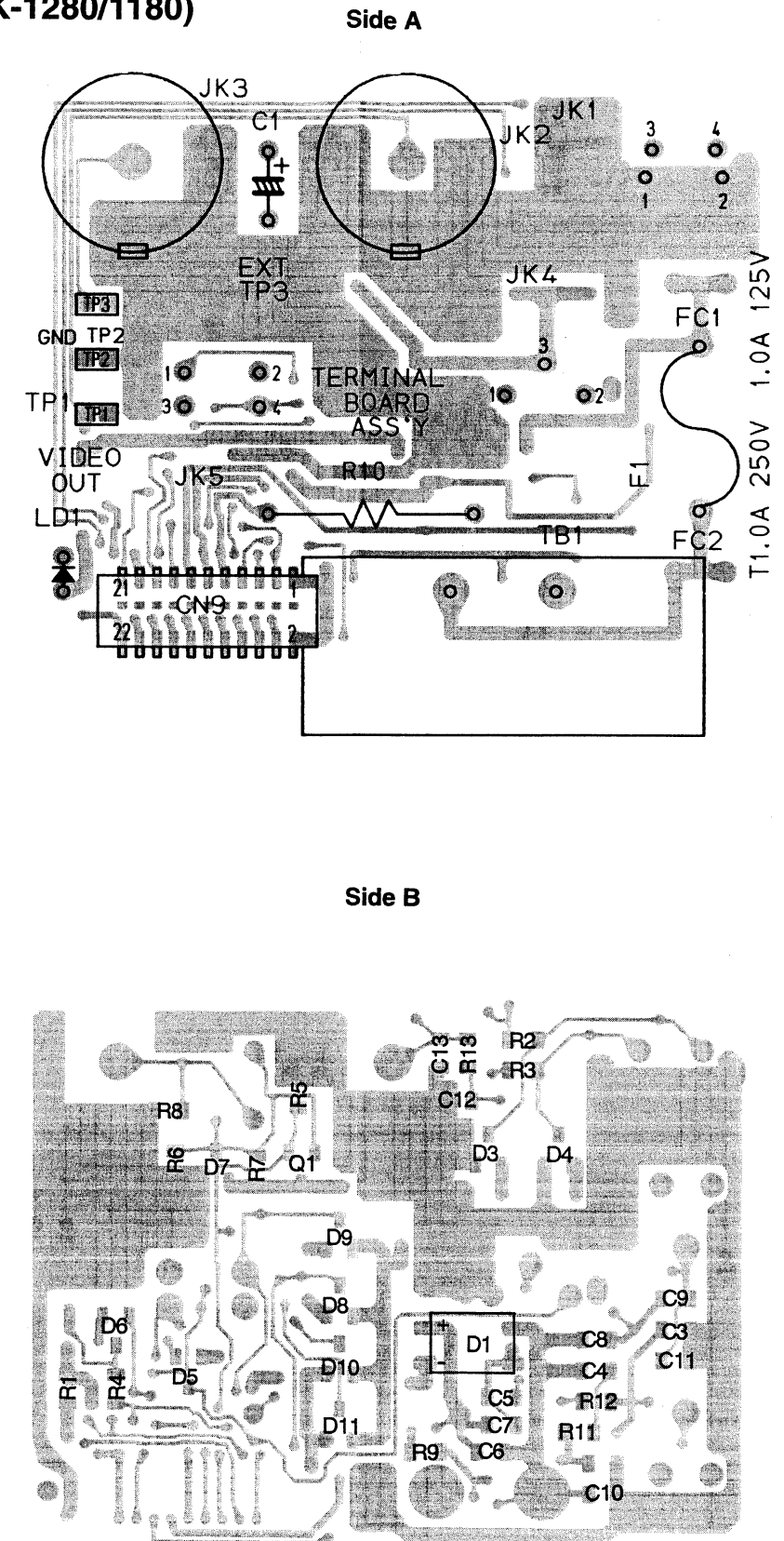
	R144	R145	R146	R147	R148	R149	R150	R151	R152	R153	R154	R155	R156	R161	R162	R163	R164	R165	R166	R167	R175	R176	R318	R319	R340	R341	R345	R346	C115	C116	C117	C118	C119	C120	C121	C122
TK-1280JAPAN/U	10	47K	15K	820	470	680	1K	SHORT	150	220	330	390	4.7K	47K	470	5K	—	1K	10K	2.7K	100K	22K	12K	12K	—	10K	—	100K	0.1	0.01	47P	68P	0.01	56P	10P	0.01
TK-1280E/TK-1281EG	10	47K	15K	820	470	680	1K	SHORT	150	220	330	390	4.7K	47K	470	5K	—	1K	10K	2.7K	100K	33K	15K	15K	10K	—	—	100K	0.1	0.01	47P	68P	0.01	56P	10P	0.01
TK-1180U	10	47K	15K	820	470	680	1K	SHORT	150	220	330	390	4.7K	47K	470	5K	—	1K	10K	2.7K	100K	22K	12K	12K	—	10K	100K	—	0.1	0.01	47P	68P	0.01	56P	10P	0.01
TK-1180E	10	47K	15K	820	470	680	1K	SHORT	150	220	330	390	4.7K	47K	470	5K	—	1K	10K	2.7K	100K	33K	15K	15K	10K	—	100K	—	0.1	0.01	47P	68P	0.01	56P	10P	0.01



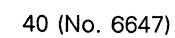
# **■ TERMINAL BOARD CIRCUIT DIAGRAM** **(TK-1280/1180)**



# **■ TERMINAL CIRCUIT BOARD** **(TK-1280/1180)**

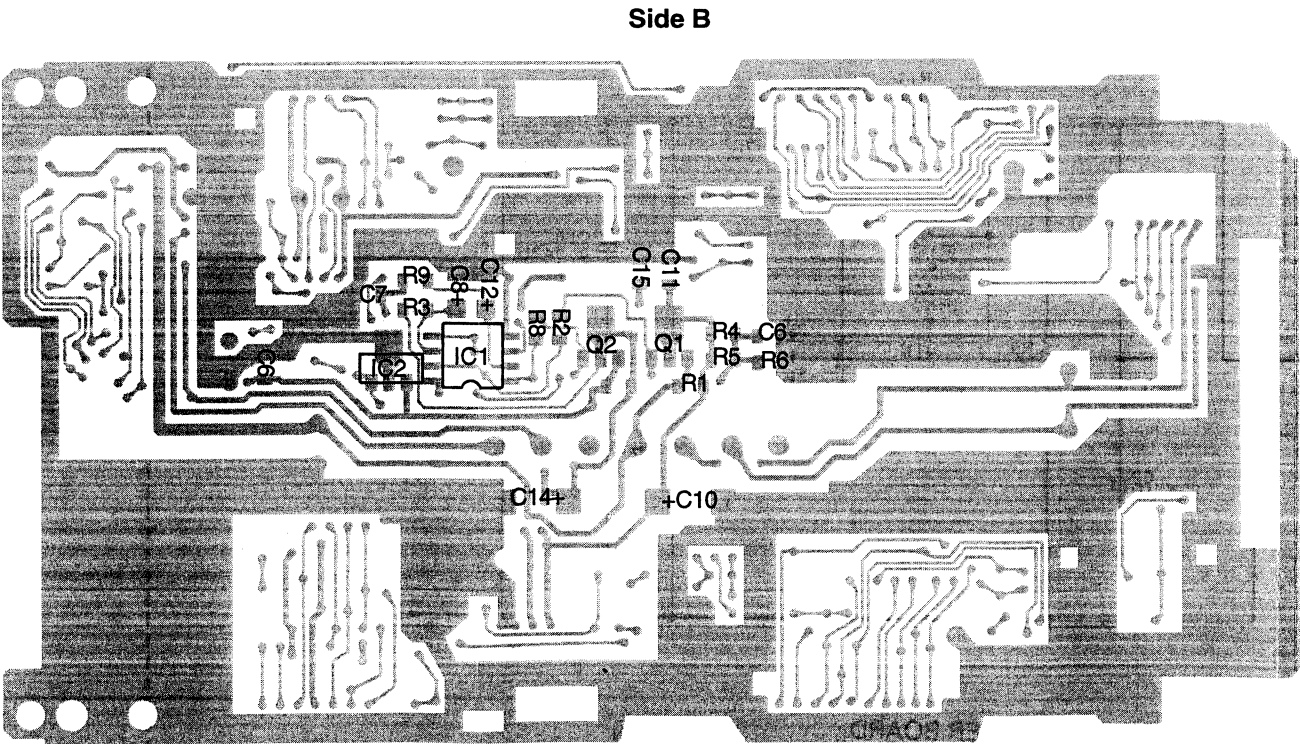
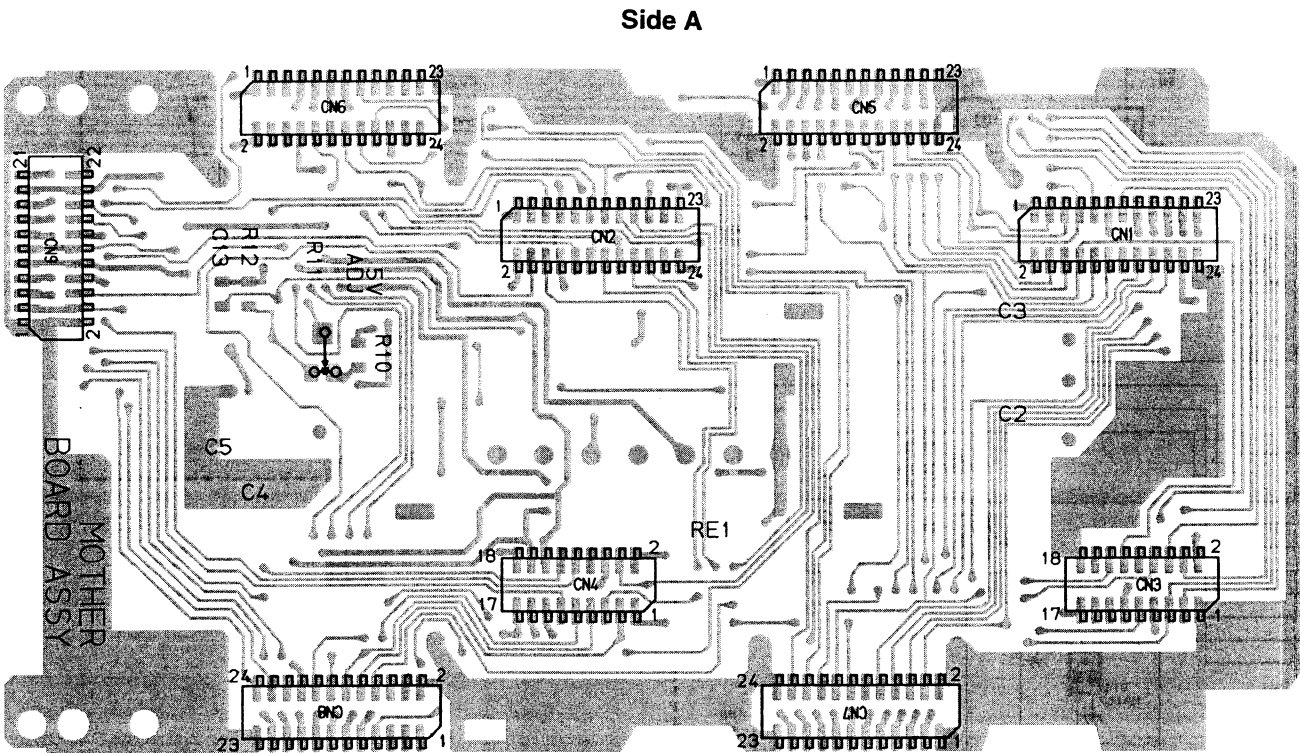




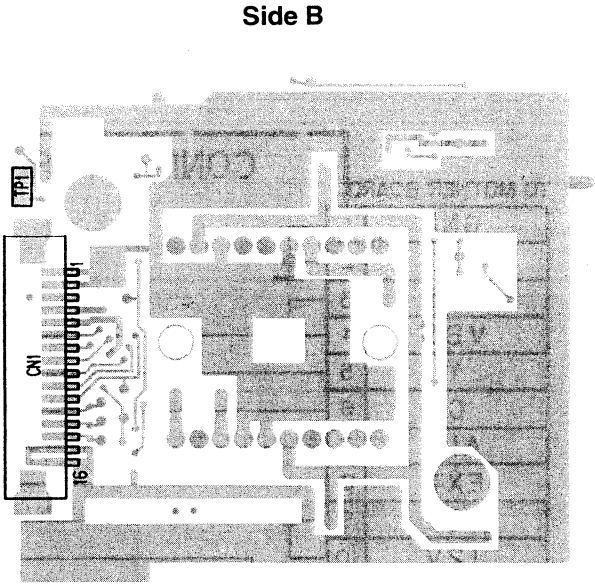
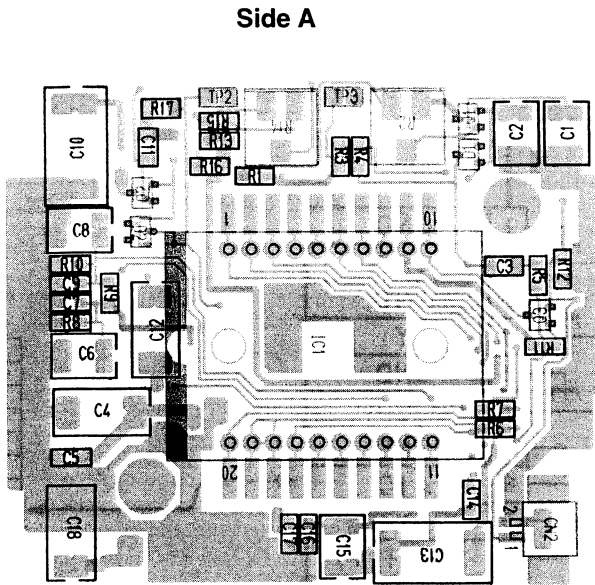




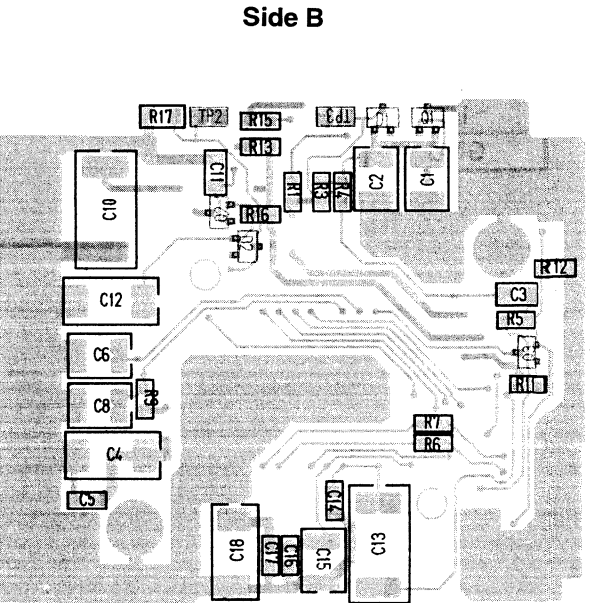
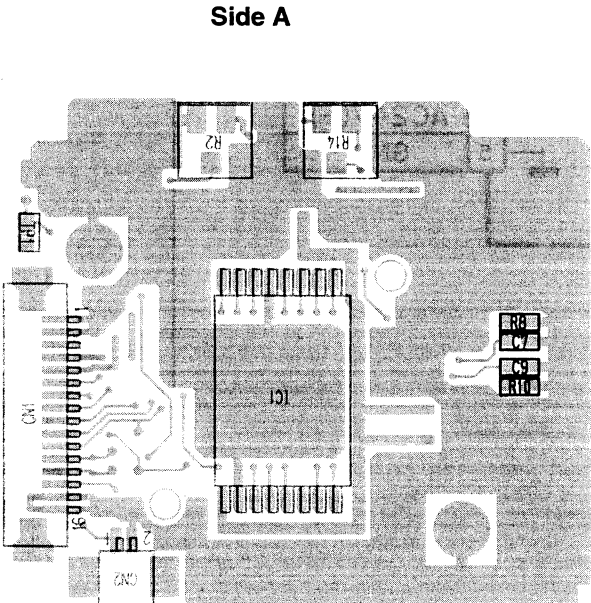
■ MOTHER CIRCUIT BOARD



■ IMAGER CIRCUIT BOARD (TK-1280/1281)



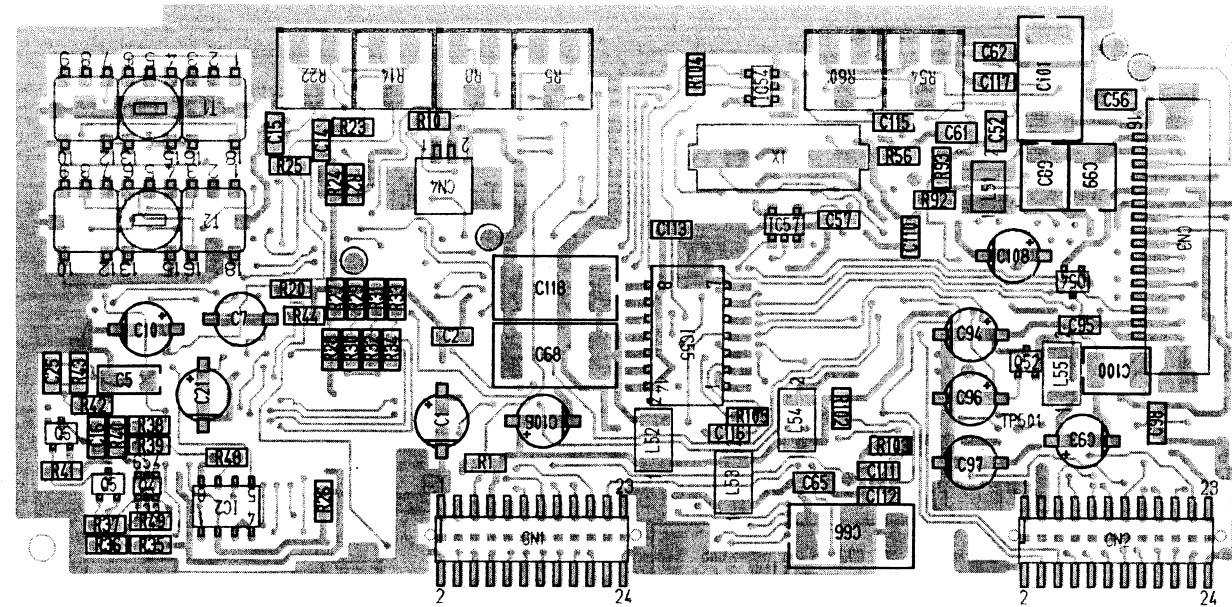
■ IMAGER CIRCUIT BOARD (TK-1180)



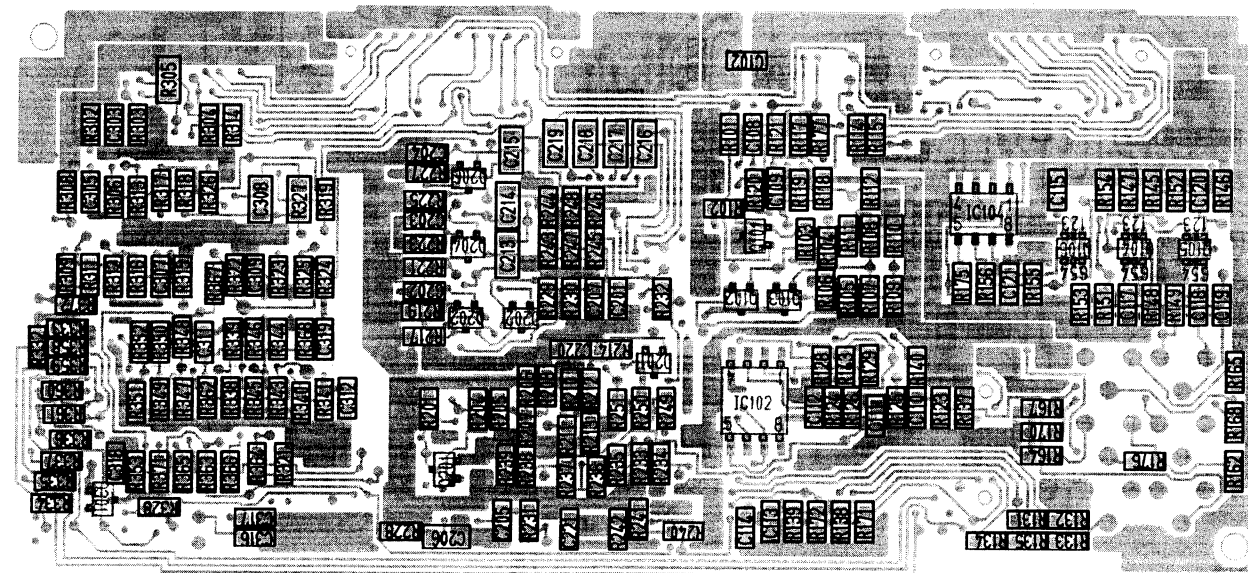


## ■ CDS/TG CIRCUIT BOARD

Side A

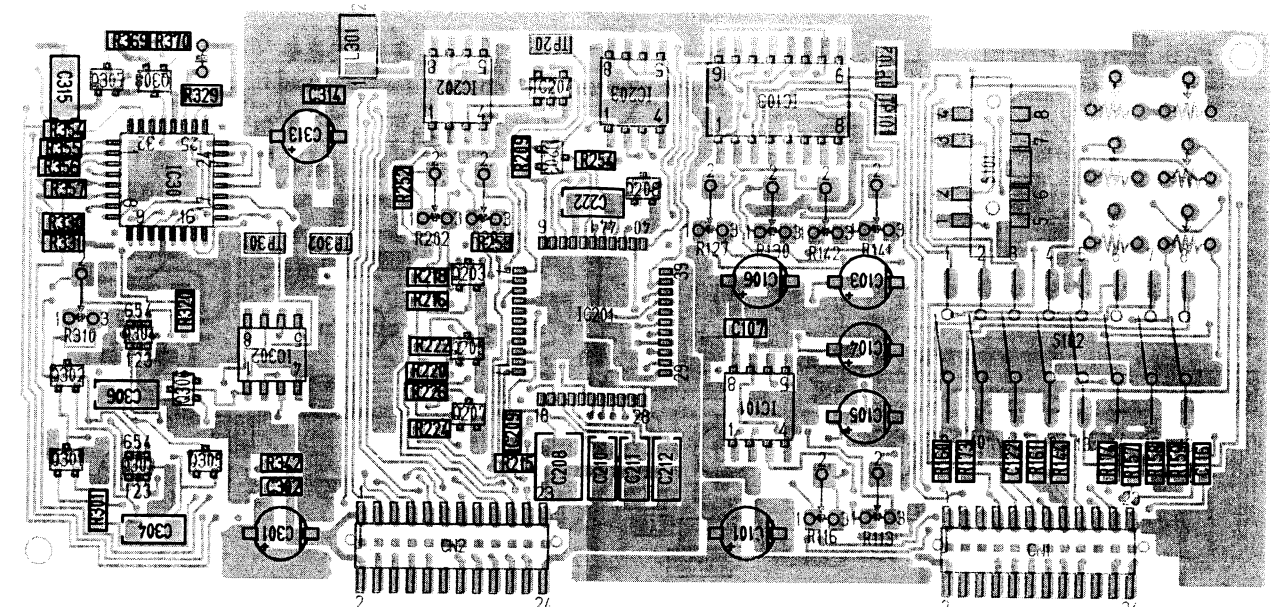


Side B

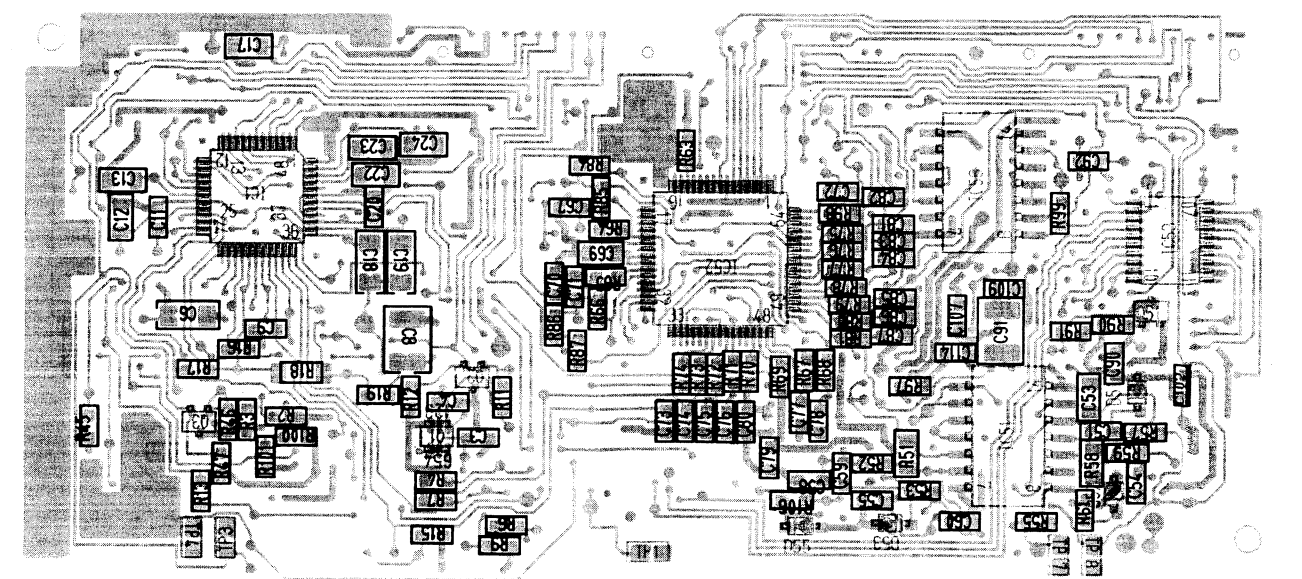


## ■ SSG/GENLOCK CIRCUIT BOARD

Side A

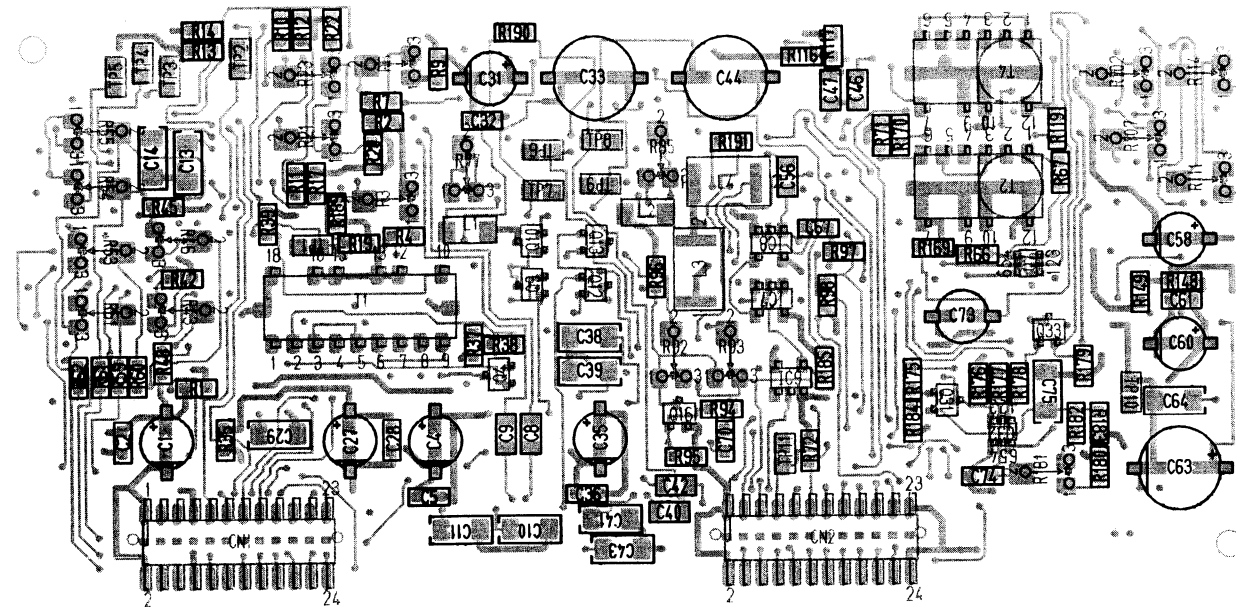
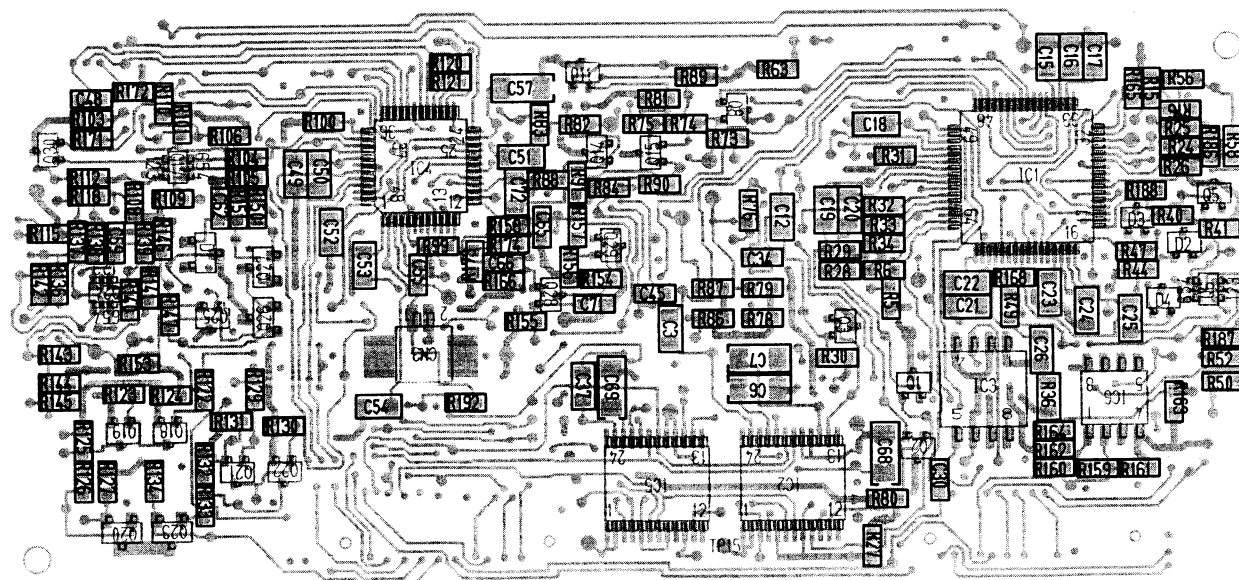


Side B

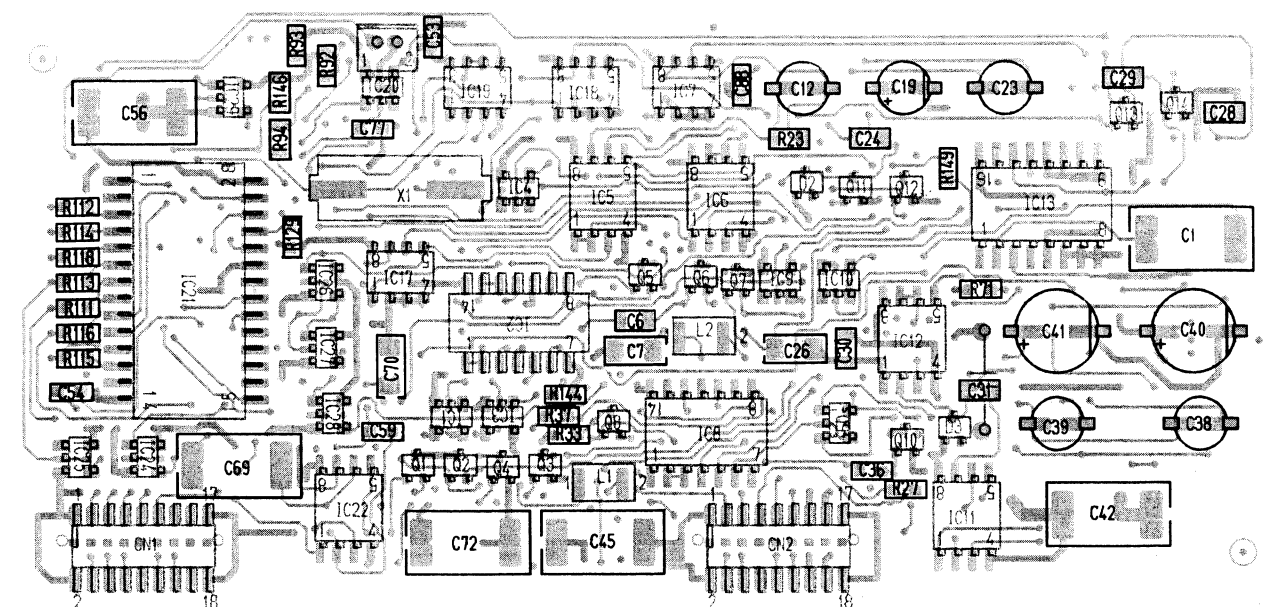
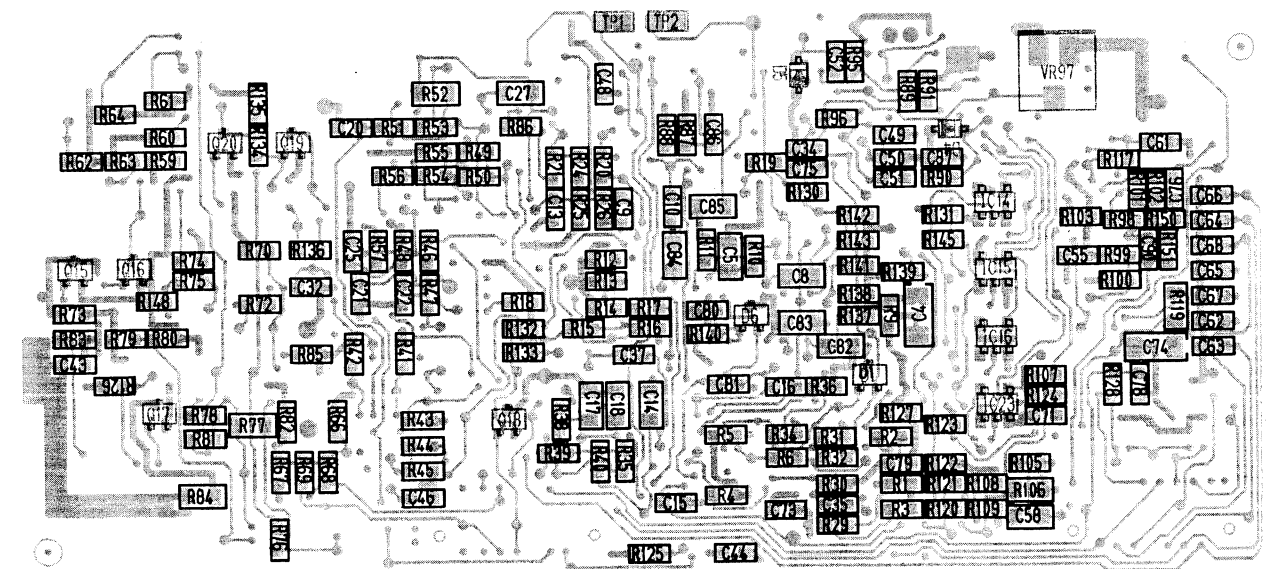


## ■ MAT/ENC CIRCUIT BOARD

### Side A

**Side B**

## ■ FEATURE CIRCUIT BOARD

**Side A****Side B**

Symbol No.	Part No.	Part Name	Description
C1	NEA11CM-106	E.CAPACITOR	10 16V
C2	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C3	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C4	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C5	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C6	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C7	NEE11HM-105	E.CAPACITOR	1.0 50V
C8	NEE21CM-225	TAN.CAPACITOR	2.2 16V
C9	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C10	NEA11CM-106	E.CAPACITOR	10 16V
C11	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C12	NCB21EK-104	CER.CAPACITOR	0.10 25V
C13	NCB21EK-104	CER.CAPACITOR	0.10 25V
C14	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C15	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C16	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C17	NCB21EK-104	CER.CAPACITOR	0.10 25V
C18	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C19	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C20	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C21	NEA11CM-106	E.CAPACITOR	10 16V
C22	NCB21EK-104	CER.CAPACITOR	0.10 25V
C23	NCB21EK-104	CER.CAPACITOR	0.10 25V
C24	NCB21EK-104	CER.CAPACITOR	0.10 25V
C25	NCT06CH-101	CER.CAPACITOR	100P 50V
C51	NCT06CH-220	CER.CAPACITOR	22P 50V
C52	NCT03CH-7R0	CER.CAPACITOR	7.0P 50V
C53	NCT03UJ-150	CER.CAPACITOR	15P 50V
C54	NCB31HK-102	CER.CAPACITOR	1000P 50V
C55	NCB31HK-102	CER.CAPACITOR	1000P 50V
C59	NCT06CH-101	CER.CAPACITOR	100P 50V
C60	NCB31HK-102	CER.CAPACITOR	1000P 50V
C61	NCB21HK-473	CER.CAPACITOR	0.047 50V
C65	NCB21HK-473	CER.CAPACITOR	0.047 50V
C66	NEE11CM-226	TAN.CAPACITOR	22 16V
C67	NCT06CH-470	CER.CAPACITOR	47P 50V
C68	NEE11CM-226	TAN.CAPACITOR	22 16V
C69	NCB21HK-473	CER.CAPACITOR	0.047 50V
C72	NCB31HK-103	CER.CAPACITOR	0.010 50V
C73	NCT06CH-470	CER.CAPACITOR	47P 50V
C74	NCT06CH-470	CER.CAPACITOR	47P 50V
C75	NCT06CH-470	CER.CAPACITOR	47P 50V
C76	NCT06CH-470	CER.CAPACITOR	47P 50V
C77	NCT06CH-470	CER.CAPACITOR	47P 50V
C78	NCT06CH-470	CER.CAPACITOR	47P 50V
C79	NCT06CH-101	CER.CAPACITOR	100P 50V
C80	NCT06CH-101	CER.CAPACITOR	100P 50V
C81	NCT06CH-470	CER.CAPACITOR	47P 50V
C83	NCT06CH-470	CER.CAPACITOR	47P 50V
C84	NCT06CH-470	CER.CAPACITOR	47P 50V
C85	NCT06CH-470	CER.CAPACITOR	47P 50V
C86	NCT06CH-470	CER.CAPACITOR	47P 50V
C87	NCT06CH-470	CER.CAPACITOR	47P 50V
C89	NEE21EM-155	TAN.CAPACITOR	1.5 25V
C90	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C91	NEE21EM-155	TAN.CAPACITOR	1.5 25V
C92	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C93	NEA11HM-335	E.CAPACITOR	3.3 50V
C94	NEA11HM-335	E.CAPACITOR	3.3 50V
C95	NCF31CZ-104	CER.CAPACITOR	0.10 16V

Symbol No.	Part No.	Part Name	Description
C96	NEA11HM-335	E.CAPACITOR	3.3 50V
C97	NEA11HM-335	E.CAPACITOR	3.3 50V
C98	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C100	NEA11HM-335	E.CAPACITOR	3.3 50V
C101	NEE11EM-106	TAN.CAPACITOR	10 25V
C102	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C106	NEA11CM-106	E.CAPACITOR	10 16V
C107	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C108	NEA11CM-106	E.CAPACITOR	10 16V
C109	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C110	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C111	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C112	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C113	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C114	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C115	NCT06CH-101	CER.CAPACITOR	100P 50V
C117	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C118	NEE11CM-226	TAN.CAPACITOR	22 16V
L51	CELP040-3R3	COIL	3.3UH
L52	CELP008-100	COIL	10UH
L53	CELP008-100	COIL	10UH
L54	CELP008-100	COIL	10UH
X1	CE42274-001	CRYSTAL	28.6363MHz
CN1	CHB102W-24R	CONNECTOR	24PIN
CN2	CHB102W-24R	CONNECTOR	24PIN
CN10	CHC105S-16N	CONNECTOR	16PIN
CN11	SCV1770-002	CONNECTOR	2PIN
TP1	SSV1096-001	TEST POINT	
TP3	SSV1096-001	TEST POINT	
TP4	SSV1096-001	TEST POINT	
TP17	SSV1096-001	TEST POINT	
TP18	SSV1096-001	TEST POINT	
T1	CE42162-001	L.P.F.	TK-1280E
T1	CE42207-001	L.P.F.	TK-1180E
T2	CE42163-001	L.P.F.	TK-1280E
T2	CE42208-001	L.P.F.	TK-1180E

## ● SSG/GL board assembly list 03

SCK2347-02-10B (TK-1280E/1281E)

SCK2347-02-11A (TK-1180E)

03□□□□□□

Symbol No.	Part No.	Part Name	Description
IC1	SC14S69F	I.C.(M)	TOSHIBA
IC2	UPD5556G	I.C.(M)	NEC
IC3	SC14S66F	I.C.(M)	TOSHIBA
IC4	SC14S66F	I.C.(M)	TOSHIBA
IC5	UPC842G	I.C.(M)	NEC
IC6	UPC842G	I.C.(M)	NEC
IC7	TC4W53F	I.C.(M)	TOSHIBA
IC8	NJM1496M	I.C.(M)	JRC
IC9	SC14S69F	I.C.(M)	TOSHIBA
IC10	SC14S69F	I.C.(M)	TOSHIBA
IC11	UPC358G	I.C.(M)	NEC
IC12	TA7555F	I.C.(M)	TOSHIBA
IC13	MC14046BF	I.C.(M)	MOTOROLA
IC14	SC14S71F	I.C.(M)	TOSHIBA
IC15	SC14S71F	I.C.(M)	TOSHIBA
IC17	TC4W53F	I.C.(M)	TOSHIBA
IC18	TC4W53F	I.C.(M)	TOSHIBA
IC19	TC7W00F	I.C.(M)	TOSHIBA
IC21	CXD1217M	I.C.(M)	SONY
IC22	UPC842G	I.C.(M)	NEC
IC23	SC14S81F	I.C.(M)	TOSHIBA
IC24	SC14S71F	I.C.(M)	TOSHIBA
IC25	SC14S69F	I.C.(M)	TOSHIBA
IC26	SC14S11F	I.C.(M)	TOSHIBA
IC27	SC14S81F	I.C.(M)	TOSHIBA
IC28	SC14S81F	I.C.(M)	TOSHIBA
Q1	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q2	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q3	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q4	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q5	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q6	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q7	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q8	2SC3936(BC)	TRANSISTOR	MATSUSHITA
Q9	FMS2	TRANSISTOR	ROHM
Q10	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q11	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q12	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q13	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q14	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q15	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q16	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q17	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q18	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q19	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q20	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
D1	MA142WK	DIODE	MATSUSHITA
D2	MA142A	DIODE	MATSUSHITA
D3	MA142A	DIODE	MATSUSHITA
D4	HVU306A	VARI-CAPA DIODE	HITACHI
D5	HVU306A	VARI-CAPA DIODE	HITACHI
D6	MA142WK	DIODE	MATSUSHITA
R1	NRSA63J-562	M.G.RESISTOR	5.6K 1/16W
R2	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R3	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R4	NRSA63J-473	M.G.RESISTOR	47K 1/16W

Symbol No.	Part No.	Part Name	Description
R5	NRSA63J-562	M.G.RESISTOR	5.6K 1/16W
R6	NRSA63J-562	M.G.RESISTOR	5.6K 1/16W
R9	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R10	NRSA63J-122	M.G.RESISTOR	1.2K 1/16W
R11	NRSA63J-332	M.G.RESISTOR	3.3K 1/16W
R12	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R13	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R14	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R15	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R16	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R17	NRSA63J-472	M.G.RESISTOR	4.7K 1/16W
R18	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R19	NRSA63J-472	M.G.RESISTOR	4.7K 1/16W
R20	NRSA63J-472	M.G.RESISTOR	4.7K 1/16W
R21	NRSA63J-472	M.G.RESISTOR	4.7K 1/16W
R23	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R24	NRSA63J-334	M.G.RESISTOR	330K 1/16W
R25	NRSA63J-472	M.G.RESISTOR	4.7K 1/16W
R26	NRSA63J-472	M.G.RESISTOR	4.7K 1/16W
R27	NRSA63J-184	M.G.RESISTOR	180K 1/16W
R29	NRSA63J-682	M.G.RESISTOR	6.8K 1/16W
R30	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R31	NRSA63J-562	M.G.RESISTOR	5.6K 1/16W
R32	NRSA63J-562	M.G.RESISTOR	5.6K 1/16W
R33	NRSA63J-272	M.G.RESISTOR	2.7K 1/16W
R34	NRSA63J-332	M.G.RESISTOR	3.3K 1/16W
R35	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R36	NRSA63J-272	M.G.RESISTOR	2.7K 1/16W
R37	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R38	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R39	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R40	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R41	NRSA63J-331	M.G.RESISTOR	330 1/16W
R42	NRSA63J-331	M.G.RESISTOR	330 1/16W
R43	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R44	NRSA63J-473	M.G.RESISTOR	47K 1/16W
R45	NRSA63J-153	M.G.RESISTOR	15K 1/16W
R46	NRSA63J-823	M.G.RESISTOR	82K 1/16W
R47	NRSA63J-473	M.G.RESISTOR	47K 1/16W
R48	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R49	NRSA63J-333	M.G.RESISTOR	33K 1/16W
R50	NRSA63J-683	M.G.RESISTOR	68K 1/16W
R51	NRSA63J-273	M.G.RESISTOR	27K 1/16W
R52	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R53	NRSA63J-393	M.G.RESISTOR	39K 1/16W
R54	NRSA63J-274	M.G.RESISTOR	270K 1/16W
R55	NRSA63J-392	M.G.RESISTOR	3.9K 1/16W
R56	NRSA63J-104	M.G.RESISTOR	100K 1/16W
R57	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R59	NRSA63J-822	M.G.RESISTOR	8.2K 1/16W
R60	NRSA63J-123	M.G.RESISTOR	12K 1/16W
R61	NRSA63J-272	M.G.RESISTOR	2.7K 1/16W
R62	NRSA63J-331	M.G.RESISTOR	330 1/16W
R63	NRSA63J-473	M.G.RESISTOR	47K 1/16W
R64	NRSA63J-223	M.G.RESISTOR	22K 1/16W
R66	NRSA63J-563	M.G.RESISTOR	56K 1/16W
R67	NRSA63J-563	M.G.RESISTOR	56K 1/16W
R68	NRSA63J-563	M.G.RESISTOR	56K 1/16W
R69	NRSA63J-563	M.G.RESISTOR	56K 1/16W



Symbol No.	Part No.	Part Name	Description		Symbol No.	Part No.	Part Name	Description	
R70	NRSA63J-103	M.G.RESISTOR	10K	1/16W	R139	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R71	NRSA63J-563	M.G.RESISTOR	56K	1/16W	R140	NRSA63J-683	M.G.RESISTOR	68K	1/16W
R72	NRSA63J-472	M.G.RESISTOR	4.7K	1/16W	R141	NRSA63J-104	M.G.RESISTOR	100K	1/16W
R73	NRSA63J-472	M.G.RESISTOR	4.7K	1/16W	R142	NRSA63J-333	M.G.RESISTOR	33K	1/16W
R74	NRSA63J-332	M.G.RESISTOR	3.3K	1/16W	R144	NRSA63J-474	M.G.RESISTOR	470K	1/16W
R75	NRSA63J-473	M.G.RESISTOR	47K	1/16W	R148	NRSA63J-153	M.G.RESISTOR	15K	1/16W
R76	NRSA63J-333	M.G.RESISTOR	33K	1/16W	R153	NRSA63J-681	M.G.RESISTOR	680	1/16W TK-1280E
					R153	NRSA63J-221	M.G.RESISTOR	220	1/16W TK-1180E
R77	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W	C1	NEE11CM-106	TAN.CAPACITOR	10	16V
R78	NRSA63J-333	M.G.RESISTOR	33K	1/16W	C4	NEE21CM-105	TAN.CAPACITOR	1.0	16V
R79	NRSA63J-223	M.G.RESISTOR	22K	1/16W	C5	NCB21HK-223	CER.CAPACITOR	0.022	50V
R80	NRSA63J-123	M.G.RESISTOR	12K	1/16W	C6	NCB21HK-473	CER.CAPACITOR	0.047	50V
R81	NRSA63J-562	M.G.RESISTOR	5.6K	1/16W	C7	NEE21CM-105	TAN.CAPACITOR	1.0	16V
R84	NRSA02J-101	M.G.RESISTOR	100	1/10W	C8	NCB21HK-473	CER.CAPACITOR	0.047	50V
R85	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W	C9	NCB31HK-472	CER.CAPACITOR	4700P	50V
R87	NRSA63J-103	M.G.RESISTOR	10K	1/16W	C10	NCB31HK-472	CER.CAPACITOR	4700P	50V
R88	NRSA63J-153	M.G.RESISTOR	15K	1/16W	C12	NEN11EM-475	E.CAPACITOR	4.7	25V
R90	NRSA63J-104	M.G.RESISTOR	100K	1/16W	C13	NCB31HK-103	CER.CAPACITOR	0.010	50V
R91	NRSA63J-0R0	M.G.RESISTOR	0	1/16W	C14	NCB21HK-473	CER.CAPACITOR	0.047	50V
R92	NRSA63J-0R0	M.G.RESISTOR	0	1/16W	C15	NCT06CH-560	CER.CAPACITOR	56P	50V
R93	NRSA63J-151	M.G.RESISTOR	150	1/16W	C16	NCB31HK-102	CER.CAPACITOR	1000P	50V
R94	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W	C17	NCB21HK-473	CER.CAPACITOR	0.047	50V
R95	NRSA63J-221	M.G.RESISTOR	220	1/16W	C18	NCB21HK-473	CER.CAPACITOR	0.047	50V
R96	NRSA63J-104	M.G.RESISTOR	100K	1/16W	C19	NEA11CM-106	E.CAPACITOR	10	16V
R97	CEVP006-103	TRIM.RESISTOR	10K	4fsc	C20	NCB31HK-222	CER.CAPACITOR	2200P	50V
R99	NRSA63J-0R0	M.G.RESISTOR	0	1/16W	C21	NCT06CH-181	CER.CAPACITOR	180P	50V
R102	NRSA63J-0R0	M.G.RESISTOR	0	1/16W	C22	NCT06CH-271	CER.CAPACITOR	270P	50V
R103	NRSA63J-100	M.G.RESISTOR	10	1/16W	C23	NEN11HM-105	E.CAPACITOR	1.0	50V
R105	NRSA63J-472	M.G.RESISTOR	4.7K	1/16W	C24	NCT03CH-102	CER.CAPACITOR	1000P	50V
R106	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W	C26	NEE21CM-105	TAN.CAPACITOR	1.0	16V
R107	NRSA63J-223	M.G.RESISTOR	22K	1/16W	C27	NCB21HK-473	CER.CAPACITOR	0.047	50V
R108	NRSA63J-472	M.G.RESISTOR	4.7K	1/16W	C28	NCB21HK-273	CER.CAPACITOR	0.027	50V
R109	NRSA63J-472	M.G.RESISTOR	4.7K	1/16W	C29	NCB21HK-473	CER.CAPACITOR	0.047	50V
R111	NRSA63J-222	M.G.RESISTOR	2.2K	1/16W	C30	NCB21HK-473	CER.CAPACITOR	0.047	50V
R112	NRSA63J-221	M.G.RESISTOR	220	1/16W	C31	NCB21EK-104	CER.CAPACITOR	0.10	25V
R113	NRSA63J-221	M.G.RESISTOR	220	1/16W	C32	NCB31HK-103	CER.CAPACITOR	0.010	50V
R114	NRSA63J-221	M.G.RESISTOR	220	1/16W	C33	QFV41HJ-105	MYLAR CAPACITOR	1.0	50V
R115	NRSA63J-221	M.G.RESISTOR	220	1/16W	C34	NCB31HK-103	CER.CAPACITOR	0.010	50V
R116	NRSA63J-221	M.G.RESISTOR	220	1/16W	C35	NCT06CH-470	CER.CAPACITOR	47P	50V
R117	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W	C36	NCT06CH-470	CER.CAPACITOR	47P	50V
R118	NRSA63J-221	M.G.RESISTOR	220	1/16W	C37	NCT06CH-560	CER.CAPACITOR	56P	50V
R119	NRVA02D-5601	M.F.RESISTOR	56	1/10W	C38	NEN11HM-105	E.CAPACITOR	1.0	50V
R120	NRSA63J-333	M.G.RESISTOR	33K	1/16W	C39	NEN11HM-474	E.CAPACITOR	0.47	50V
R121	NRSA63J-333	M.G.RESISTOR	33K	1/16W	C40	NEA11CM-476	E.CAPACITOR	47	16V
R122	NRSA63J-392	M.G.RESISTOR	3.9K	1/16W	C41	NEA11CM-476	E.CAPACITOR	47	16V
R123	NRSA63J-682	M.G.RESISTOR	6.8K	1/16W	C42	NEE11CM-226	TAN.CAPACITOR	22	16V
R124	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W	C43	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R125	NRSA63J-182	M.G.RESISTOR	1.8K	1/16W	C44	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R126	NRSA63J-123	M.G.RESISTOR	12K	1/16W	C45	NEE11CM-226	TAN.CAPACITOR	22	16V
R127	NRSA63J-0R0	M.G.RESISTOR	0	1/16W	C46	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R128	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W	C48	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R129	NRSA63J-0R0	M.G.RESISTOR	0	1/16W	C49	NCT06CH-330	CER.CAPACITOR	33P	50V
R130	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W	C52	NCB31HK-102	CER.CAPACITOR	1000P	50V
R132	NRSA63J-562	M.G.RESISTOR	5.6K	1/16W	C53	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R133	NRSA63J-101	M.G.RESISTOR	100	1/16W	C54	NCB31HK-103	CER.CAPACITOR	0.010	50V
R134	NRSA63J-274	M.G.RESISTOR	270K	1/16W	C55	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R135	NRSA63J-392	M.G.RESISTOR	3.9K	1/16W	C56	NEE11CM-226	TAN.CAPACITOR	22	16V
R136	NRSA63J-104	M.G.RESISTOR	100K	1/16W	C58	NCB21EK-104	CER.CAPACITOR	0.10	25V
R137	NRSA63J-473	M.G.RESISTOR	47K	1/16W					
R138	NRSA02J-474	M.G.RESISTOR	470K	1/10W					

● MAT/ENC board assembly list 04  
 SCK2348-02-40B (TK-1280E/1281E)  
 SCK2349-02-61A (TK-1180E)

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Symbol No.	Part No.	Part Name	Description
C59	NCB31HK-103	CER.CAPACITOR	0.010 50V
C60	NCT06CH-470	CER.CAPACITOR	47P 50V
C62	NCT06CH-470	CER.CAPACITOR	47P 50V
C63	NCT06CH-470	CER.CAPACITOR	47P 50V
C64	NCT06CH-470	CER.CAPACITOR	47P 50V
C65	NCT06CH-391	CER.CAPACITOR	390P 50V
C66	NCT06CH-470	CER.CAPACITOR	47P 50V
C67	NCT06CH-470	CER.CAPACITOR	47P 50V
C69	NEE11CM-106	TAN.CAPACITOR	10 16V
C70	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C72	NEE11CM-226	TAN.CAPACITOR	22 16V
C73	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C74	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C76	NCB31HK-103	CER.CAPACITOR	0.010 50V
C79	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C80	NCT06CH-101	CER.CAPACITOR	100P 50V
C81	NCT06CH-101	CER.CAPACITOR	100P 50V
C82	NCT03CH-102	CER.CAPACITOR	1000P 50V
C83	NCB21HK-473	CER.CAPACITOR	0.047 50V
C84	NCB21HK-473	CER.CAPACITOR	0.047 50V
C85	NCT03CH-102	CER.CAPACITOR	1000P 50V
C86	NCB31HK-102	CER.CAPACITOR	1000P 50V
C88	NCF31CZ-104	CER.CAPACITOR	0.10 16V
L1	CELP008-220	COIL	22UH
L2	CELP008-220	COIL	22UH
X1	CE42275-001	CRYSTAL	17.734475MHz
CN3	CHB102W-18R	CONNECTOR	18PIN
CN4	CHB102W-18R	CONNECTOR	18PIN
CN12	SCV1978-S02	CONNECTOR	2PIN
TP1	SSV1096-001	TEST POINT	
TP2	SSV1096-001	TEST POINT	

Symbol No.	Part No.	Part Name	Description
IC1	CXA1391R	I.C.(M)	SONY
IC2	CXL1517N	I.C.(M)	SONY TK-1280E
IC2	CXL1518N	I.C.(M)	SONY TK-1180E
IC3	CXL5504M	I.C.(M)	SONY
IC4	CXA1592R	I.C.(M)	SONY
IC5	CXL1517N	I.C.(M)	SONY TK-1280E
IC5	CXL1518N	I.C.(M)	SONY TK-1180E
IC6	UPC4558G	I.C.(M)	NEC
IC7	SC14S11F	I.C.(M)	TOSHIBA
IC8	TC7S66F	I.C.(M)	TOSHIBA
Q1	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q2	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q3	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q4	2SA1532(ABC)	TRANSISTOR	MATSUSHITA
Q5	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q6	XP4501	TRANSISTOR	MATSUSHITA
Q7	XP4501	TRANSISTOR	MATSUSHITA
Q8	2SC3936(BC)	TRANSISTOR	MATSUSHITA
Q9	2SC3936(BC)	TRANSISTOR	MATSUSHITA
Q10	2SC3936(BC)	TRANSISTOR	MATSUSHITA
Q11	2SC3936(BC)	TRANSISTOR	MATSUSHITA
Q12	2SC3936(BC)	TRANSISTOR	MATSUSHITA
Q13	2SC3936(BC)	TRANSISTOR	MATSUSHITA
Q14	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q15	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q16	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q17	XP4501	TRANSISTOR	MATSUSHITA
Q18	2SC3930(ABC)	TRANSISTOR	MATSUSHITA TK-1280E
Q19	2SA1532(ABC)	TRANSISTOR	MATSUSHITA TK-1280E
Q20	2SD1030(RS)	TRANSISTOR	MATSUSHITA TK-1280E
Q21	2SC3936(BC)	TRANSISTOR	MATSUSHITA
Q22	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q23	2SD1030(RS)	TRANSISTOR	MATSUSHITA
Q24	XP6534	TRANSISTOR	MATSUSHITA
Q25	2SC3930(ABC)	TRANSISTOR	MATSUSHITA
Q26	2SD1030(RS)	TRANSISTOR	MATSUSHITA
Q27	2SD601(QR)	TRANSISTOR	MATSUSHITA
Q28	2SC3936(BC)	TRANSISTOR	MATSUSHITA
Q29	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q30	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q31	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q32	XP6435	TRANSISTOR	MATSUSHITA
Q33	2SC3930(ABC)	TRANSISTOR	MATSUSHITA
D1	MA3056(L)	ZENER DIODE	MATSUSHITA
D2	MA147	DIODE	MATSUSHITA
D3	MA142K	DIODE	MATSUSHITA
D4	MA147	DIODE	MATSUSHITA
R1	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R2	NRSA63J-332	M.G.RESISTOR	3.3K 1/16W
R3	CEVP005-332	TRIM.RESISTOR	3.3K Y1.Y2.GAIN
R4	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R6	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R7	NRSA63J-152	M.G.RESISTOR	1.5K 1/16W
R8	CEVP005-472	TRIM.RESISTOR	4.7K C1.GAIN
R9	NRSA63J-822	M.G.RESISTOR	8.2K 1/16W
R10	NRSA63J-124	M.G.RESISTOR	120K 1/16W

Symbol No.	Part No.	Part Name	Description
R11	NRSA63J-562	M.G.RESISTOR	5.6K 1/16W
R12	NRSA63J-123	M.G.RESISTOR	12K 1/16W
R13	NRSA63J-822	M.G.RESISTOR	8.2K 1/16W
R14	NRSA63J-822	M.G.RESISTOR	8.2K 1/16W
R15	NRSA63J-822	M.G.RESISTOR	8.2K 1/16W
R16	NRSA63J-822	M.G.RESISTOR	8.2K 1/16W
R17	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R20	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R21	CEVP005-103	TRIM.RESISTOR	10K R.GAIN
R22	NRSA63J-472	M.G.RESISTOR	4.7K 1/16W
R23	CEVP005-103	TRIM.RESISTOR	10K B.GAIN
R24	NRSA63J-472	M.G.RESISTOR	4.7K 1/16W
R26	NRSA63J-123	M.G.RESISTOR	12K 1/16W
R27	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R28	NRSA63J-472	M.G.RESISTOR	4.7K 1/16W
R29	NRSA63J-472	M.G.RESISTOR	4.7K 1/16W
R30	NRSA63J-472	M.G.RESISTOR	4.7K 1/16W
R31	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R32	NRSA63J-183	M.G.RESISTOR	18K 1/16W
R33	NRSA63J-273	M.G.RESISTOR	27K 1/16W
R34	NRSA63J-153	M.G.RESISTOR	15K 1/16W
R35	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R36	NRSA02J-105	M.G.RESISTOR	1.0M 1/10W
R37	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R38	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R39	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R40	NRSA63J-682	M.G.RESISTOR	6.8K 1/16W
R41	NRSA63J-272	M.G.RESISTOR	2.7K 1/16W
R42	NRSA63J-472	M.G.RESISTOR	4.7K 1/16W
R43	CEVP005-682	TRIM.RESISTOR	6.8K V.APA CON
R44	NRSA63J-472	M.G.RESISTOR	4.7K 1/16W
R45	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R46	CEVP005-682	TRIM.RESISTOR	6.8K DL.YH.GAIN
R47	NRSA63J-472	M.G.RESISTOR	4.7K 1/16W
R48	NRSA63J-123	M.G.RESISTOR	12K 1/16W
R49	NRSA63J-123	M.G.RESISTOR	12K 1/16W
R50	NRSA63J-561	M.G.RESISTOR	560 1/16W
R51	CEVP005-103	TRIM.RESISTOR	10K R-Y.GAIN
R52	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R53	CEVP005-103	TRIM.RESISTOR	10K B-Y.GAIN
R54	CEVP005-103	TRIM.RESISTOR	10K B-Y.HUE
R55	CEVP005-103	TRIM.RESISTOR	10K R-Y.HUE
R56	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R58	NRSA63J-153	M.G.RESISTOR	15K 1/16W
R63	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R66	NRSA63J-392	M.G.RESISTOR	3.9K 1/16W
R67	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R71	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R72	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R73	NRSA63J-332	M.G.RESISTOR	3.3K 1/16W
R74	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R75	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R76	NRSA63J-182	M.G.RESISTOR	1.8K 1/16W
R77	CEVP005-682	TRIM.RESISTOR	6.8K R-Y1.GAIN
R78	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R79	NRSA63J-562	M.G.RESISTOR	5.6K 1/16W
R80	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R81	NRSA63J-332	M.G.RESISTOR	3.3K 1/16W
R82	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W

Symbol No.	Part No.	Part Name	Description
R148	NRSA63J-100	M.G.RESISTOR	10 1/16W
R149	NRSA63J-560	M.G.RESISTOR	56 1/16W
R150	NRSA63J-560	M.G.RESISTOR	56 1/16W
R151	NRSA63J-391	M.G.RESISTOR	390 1/16W
R153	NRSA63J-104	M.G.RESISTOR	100K 1/16W
R154	NRSA63J-182	M.G.RESISTOR	1.8K 1/16W
R155	NRSA63J-122	M.G.RESISTOR	1.2K 1/16W
R156	NRSA63J-392	M.G.RESISTOR	3.9K 1/16W
R157	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R158	NRSA63J-152	M.G.RESISTOR	1.5K 1/16W
R159	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R164	NRSA63J-562	M.G.RESISTOR	5.6K 1/16W
R166	NRSA63J-392	M.G.RESISTOR	3.9K 1/16W
R168	NRSA63J-333	M.G.RESISTOR	33K 1/16W
R169	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R170	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R171	NRSA63J-183	M.G.RESISTOR	18K 1/16W
R172	NRSA63J-182	M.G.RESISTOR	1.8K 1/16W
R173	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R175	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R176	NRSA63J-152	M.G.RESISTOR	1.5K 1/16W
R177	NRSA63J-391	M.G.RESISTOR	390 1/16W
R178	NRSA63J-151	M.G.RESISTOR	150 1/16W
R179	NRSA63J-392	M.G.RESISTOR	3.9K 1/16W
R180	NRSA63J-152	M.G.RESISTOR	1.5K 1/16W
R181	CEVP005-681	TRIM.RESISTOR	680 Y.KNEE
R182	NRSA63J-821	M.G.RESISTOR	820 1/16W
R183	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R185	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R186	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R187	NRSA63J-333	M.G.RESISTOR	33K 1/16W
R188	NRSA63J-333	M.G.RESISTOR	33K 1/16W
R190	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R191	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R193	NRSA63J-272	M.G.RESISTOR	2.7K 1/16W TK-1280E
C1	NEA11CM-106	E.CAPACITOR	10 16V
C2	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C3	NCB21EK-104	CER.CAPACITOR	0.10 25V
C4	NEA11CM-106	E.CAPACITOR	10 16V
C5	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C6	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C7	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C8	NCB21EK-104	CER.CAPACITOR	0.10 25V
C9	NCB21EK-104	CER.CAPACITOR	0.10 25V
C10	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C11	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C12	NCB21EK-104	CER.CAPACITOR	0.10 25V
C13	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C14	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C15	NCB21EK-104	CER.CAPACITOR	0.10 25V
C16	NCB21EK-104	CER.CAPACITOR	0.10 25V
C17	NCB21EK-104	CER.CAPACITOR	0.10 25V
C18	NCB21EK-104	CER.CAPACITOR	0.10 25V
C19	NCB21EK-104	CER.CAPACITOR	0.10 25V
C20	NCB21EK-104	CER.CAPACITOR	0.10 25V
C21	NCF21CZ-105	CER.CAPACITOR	1.0 16V
C22	NCF21CZ-105	CER.CAPACITOR	1.0 16V

Symbol No.	Part No.	Part Name	Description
R83	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R84	NRSA63J-182	M.G.RESISTOR	1.8K 1/16W
R85	CEVPO05-682	TRIM.RESISTOR	6.8K B-Y1.GAIN
R86	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R87	NRSA63J-562	M.G.RESISTOR	5.6K 1/16W
R88	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R89	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R90	NRSA63J-473	M.G.RESISTOR	47K 1/16W
R91	NRSA63J-473	M.G.RESISTOR	47K 1/16W
R92	CEVPO05-223	TRIM.RESISTOR	22K R-Y.OFFSET
R93	CEVPO05-223	TRIM.RESISTOR	22K B-Y.OFFSET
R94	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R95	NRSA63J-472	M.G.RESISTOR	4.7K 1/16W
R96	NRSA63J-152	M.G.RESISTOR	1.5K 1/16W
R99	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R100	NRSA63J-223	M.G.RESISTOR	22K 1/16W
R101	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R102	CEVPO05-103	TRIM.RESISTOR	10K BURST
R103	NRSA63J-332	M.G.RESISTOR	3.3K 1/16W
R104	NRSA63J-682	M.G.RESISTOR	6.8K 1/16W
R105	NRSA63J-682	M.G.RESISTOR	6.8K 1/16W
R106	NRSA63J-332	M.G.RESISTOR	3.3K 1/16W
R107	CEVPO05-682	TRIM.RESISTOR	6.8K APL
R108	NRSA63J-682	M.G.RESISTOR	6.8K 1/16W
R109	NRSA63J-562	M.G.RESISTOR	5.6K 1/16W
R110	NRSA63J-392	M.G.RESISTOR	3.9K 1/16W
R111	CEVPO05-103	TRIM.RESISTOR	10K Y.GAIN
R112	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R114	CEVPO05-103	TRIM.RESISTOR	10K Y.SETUP
R115	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R117	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R119	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R120	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R121	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R122	NRSA63J-101	M.G.RESISTOR	100 1/16W TK-1280E
R123	NRSA63J-272	M.G.RESISTOR	2.7K 1/16W TK-1280E
R124	NRSA63J-122	M.G.RESISTOR	1.2K 1/16W TK-1280E
R125	NRSA63J-122	M.G.RESISTOR	1.2K 1/16W TK-1280E
R126	NRSA63J-101	M.G.RESISTOR	100 1/16W TK-1280E
R127	NRSA63J-562	M.G.RESISTOR	5.6K 1/16W TK-1280E
R129	NRSA63J-101	M.G.RESISTOR	100 1/16W
R130	NRSA63J-272	M.G.RESISTOR	2.7K 1/16W
R131	NRSA63J-122	M.G.RESISTOR	1.2K 1/16W
R132	NRSA63J-272	M.G.RESISTOR	2.7K 1/16W TK-1280E
R132	NRSA63J-122	M.G.RESISTOR	1.2K 1/16W TK-1180E
R133	NRSA63J-101	M.G.RESISTOR	100 1/16W
R134	NRSA63J-392	M.G.RESISTOR	3.9K 1/16W
R136	NRSA63J-223	M.G.RESISTOR	22K 1/16W
R137	NRSA63J-123	M.G.RESISTOR	12K 1/16W
R138	NRSA63J-101	M.G.RESISTOR	100 1/16W
R139	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R140	NRSA63J-471	M.G.RESISTOR	470 1/16W
R141	NRSA63J-681	M.G.RESISTOR	680 1/16W
R142	NRSA63J-222	M.G.RESISTOR	2.2K 1/16W
R143	NRSA63J-123	M.G.RESISTOR	12K 1/16W
R144	NRSA63J-472	M.G.RESISTOR	4.7K 1/16W
R145	NRSA63J-223	M.G.RESISTOR	22K 1/16W
R146	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R147	NRSA63J-101	M.G.RESISTOR	100 1/16W

Symbol No.	Part No.	Part Name	Description
C23	NCB21EK-104	CER.CAPACITOR	0.10 25V
C24	NCB21EK-104	CER.CAPACITOR	0.10 25V
C25	NCB21EK-104	CER.CAPACITOR	0.10 25V
C26	NCF21CZ-105	CER.CAPACITOR	1.0 16V
C27	NEA11CM-106	E.CAPACITOR	10 16V
C28	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C29	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C30	NCB31HK-102	CER.CAPACITOR	1000P 50V
C31	NEA11CM-106	E.CAPACITOR	10 16V
C32	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C33	NEN11AM-336	E.CAPACITOR	33 10V
C34	NCT06CH-390	CER.CAPACITOR	39P 50V
C35	NEA11CM-106	E.CAPACITOR	10 16V
C36	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C37	NCB21EK-104	CER.CAPACITOR	0.10 25V
C38	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C39	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C40	NCB21EK-104	CER.CAPACITOR	0.10 25V
C41	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C42	NCB21EK-104	CER.CAPACITOR	0.10 25V
C43	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C44	NEN11AM-336	E.CAPACITOR	33 10V
C45	NCT06CH-390	CER.CAPACITOR	39P 50V
C46	NCB21EK-104	CER.CAPACITOR	0.10 25V
C47	NCB21EK-104	CER.CAPACITOR	0.10 25V
C48	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C49	NCF21CZ-105	CER.CAPACITOR	1.0 16V
C50	NCB21EK-104	CER.CAPACITOR	0.10 25V
C51	NCB21EK-104	CER.CAPACITOR	0.10 25V
C52	NCB21EK-104	CER.CAPACITOR	0.10 25V
C53	NCB21EK-104	CER.CAPACITOR	0.10 25V
C54	NCB21EK-104	CER.CAPACITOR	0.10 25V
C55	NCB31HK-102	CER.CAPACITOR	1000P 50V
C56	NCB21EK-104	CER.CAPACITOR	0.10 25V
C57	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C58	NEA10GM-476	E.CAPACITOR	47 4V
C59	NCT06CH-9R0	CER.CAPACITOR	9.0P 50V
C60	NEA11CM-106	E.CAPACITOR	10 16V
C61	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C62	NCB31HK-102	CER.CAPACITOR	1000P 50V
C63	NEA10JM-107	E.CAPACITOR	100 6.3V
C64	NEE21CM-684	TAN.CAPACITOR	0.68 16V
C65	NCT06CH-151	CER.CAPACITOR	150P 50V
C66	NCT06CH-180	CER.CAPACITOR	18P 50V
C67	NCB31HK-103	CER.CAPACITOR	0.010 50V
C68	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C69	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C70	NCT06CH-101	CER.CAPACITOR	100P 50V
C71	NCT06CH-180	CER.CAPACITOR	18P 50V
C72	NCB21EK-104	CER.CAPACITOR	0.10 25V
C73	NEN11HM-105	E.CAPACITOR	1.0 50V
C74	NCF31CZ-104	CER.CAPACITOR	0.10 16V
C75	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C76	NCT06CH-271	CER.CAPACITOR	270P 50V TK-1180E
C77	NCT06CH-271	CER.CAPACITOR	270P 50V TK-1180E
C78	NCT06CH-390	CER.CAPACITOR	39P 50V TK-1180E
L1	CE41131-330	INDUCTOR	33UH
L2	CE41131-330	INDUCTOR	33UH
L3	CE40344-8R2	INDUCTOR	8.2UH



## ● FEATURE board assembly list 05

SCK2347-03-40B (TK-1280E/1281E)

SCK2347-03-61A (TK-1180E)

05□□□□□□

Symbol No.	Part No.	Part Name	Description
L4	CE40344-680	INDUCTOR	68UH
CN5	CHB102W-24R	CONNECTOR	24PIN
CN6	CHB102W-24R	CONNECTOR	24PIN
CN12	SCV1770-002	CONNECTOR	2PIN
TP1	SSV1096-001	TEST POINT	
TP2	SSV1096-001	TEST POINT	
TP3	SSV1096-001	TEST POINT	
TP6	SSV1096-001	TEST POINT	
TP7	SSV1096-001	TEST POINT	
TP8	SSV1096-001	TEST POINT	
TP9	SSV1096-001	TEST POINT	
TP11	SSV1096-001	TEST POINT	
T1	CE42206-001	L.P.F.	
T2	CE41920-00A	L.P.F.	
T4	CE41919-00A	L.P.F.	TK-1280E
T4	CE42017-00A	L.P.F.	TK-1180E

Symbol No.	Part No.	Part Name	Description
IC101	UPC358G	I.C.(M)	NEC
IC102	UPC358G	I.C.(M)	NEC
IC103	TC4052BF	I.C.(M)	TOSHIBA
IC104	TC4W53F	I.C.(M)	TOSHIBA
IC201	HA118118MA	I.C.(M)	HITACHI
IC202	TA7555F	I.C.(M)	TOSHIBA
IC203	UPC358G	I.C.(M)	NEC
IC204	SC14S81F	I.C.(M)	TOSHIBA
IC301	SC405628FB	I.C.(M)	MOTOROLA
IC302	UPC4558G	I.C.(M)	NEC
Q101	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q102	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q103	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q104	XP4501	TRANSISTOR	MATSUSHITA
Q105	XP6401	TRANSISTOR	MATSUSHITA
Q106	XP4501	TRANSISTOR	MATSUSHITA
Q201	2SC3936(BC)	TRANSISTOR	MATSUSHITA
Q202	2SC3936(BC)	TRANSISTOR	MATSUSHITA
Q203	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q204	2SC3936(BC)	TRANSISTOR	MATSUSHITA
Q205	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q206	2SC3936(BC)	TRANSISTOR	MATSUSHITA
Q207	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q208	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q301	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q302	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q303	XP4601	TRANSISTOR	MATSUSHITA
Q304	XP4601	TRANSISTOR	MATSUSHITA
Q305	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q306	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
Q307	2SB1218A(QR)	TRANSISTOR	MATSUSHITA
Q308	2SD1819A(QR)	TRANSISTOR	MATSUSHITA
D202	MA142K	DIODE	MATSUSHITA
D203	MA142K	DIODE	MATSUSHITA
D301	MA142K	DIODE	MATSUSHITA
R101	NRSA63J-101	M.G.RESISTOR	100 1/16W
R102	NRSA63J-562	M.G.RESISTOR	5.6K 1/16W
R103	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R104	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R105	NRSA63J-332	M.G.RESISTOR	3.3K 1/16W
R107	NRSA63J-102	M.G.RESISTOR	1.0K 1/16W
R108	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R109	NRSA63J-0R0	M.G.RESISTOR	0 1/16W
R110	NRSA63J-224	M.G.RESISTOR	220K 1/16W
R111	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R112	NRSA63J-562	M.G.RESISTOR	5.6K 1/16W
R113	CEVP005-102	TRIM.RESISTOR	1K GAIN
R114	NRSA63J-332	M.G.RESISTOR	3.3K 1/16W
R115	NRSA63J-223	M.G.RESISTOR	22K 1/16W
R116	CEVP005-473	TRIM.RESISTOR	47K AGC
R117	NRSA63J-331	M.G.RESISTOR	330 1/16W
R118	NRSA63J-272	M.G.RESISTOR	2.7K 1/16W
R119	NRSA63J-392	M.G.RESISTOR	3.9K 1/16W
R120	NRSA63J-103	M.G.RESISTOR	10K 1/16W
R121	NRSA63J-103	M.G.RESISTOR	10K 1/16W

Symbol No.	Part No.	Part Name	Description		Symbol No.	Part No.	Part Name	Description	
R122	QVPC406-103	TRIM.RESISTOR	10K	R-B	R206	NRSA63J-334	M.G.RESISTOR	330K	1/16W
R123	NRSA63J-393	M.G.RESISTOR	39K	1/16W	R207	NRSA63J-334	M.G.RESISTOR	330K	1/16W
R124	NRSA63J-183	M.G.RESISTOR	18K	1/16W	R208	NRSA63J-334	M.G.RESISTOR	330K	1/16W
R125	NRSA63J-153	M.G.RESISTOR	15K	1/16W	R209	NRSA63J-334	M.G.RESISTOR	330K	1/16W
R126	NRSA63J-223	M.G.RESISTOR	22K	1/16W	R210	NRSA63J-334	M.G.RESISTOR	330K	1/16W
R127	CEVPO05-332	TRIM.RESISTOR	3.3K	R.OFFSET	R211	NRSA63J-334	M.G.RESISTOR	330K	1/16W
R128	NRSA63J-183	M.G.RESISTOR	18K	1/16W	R212	NRSA63J-334	M.G.RESISTOR	330K	1/16W
R129	NRSA63J-153	M.G.RESISTOR	15K	1/16W	R213	NRSA63J-334	M.G.RESISTOR	330K	1/16W
R130	CEVPO05-223	TRIM.RESISTOR	22K	R.GAIN	R214	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R131	NRSA63J-103	M.G.RESISTOR	10K	1/16W	R215	NRSA63J-334	M.G.RESISTOR	330K	1/16W
R132	NRSA63J-154	M.G.RESISTOR	150K	1/16W	R216	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R133	NRSA63J-273	M.G.RESISTOR	27K	1/16W	R217	NRSA63J-272	M.G.RESISTOR	2.7K	1/16W
R134	NRSA63J-103	M.G.RESISTOR	10K	1/16W	R218	NRSA63J-152	M.G.RESISTOR	1.5K	1/16W
R135	NRSA63J-104	M.G.RESISTOR	100K	1/16W	R219	NRSA63J-182	M.G.RESISTOR	1.8K	1/16W
R136	QVPC406-103	TRIM.RESISTOR	10K	G-Mg	R220	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R137	NRSA63J-332	M.G.RESISTOR	3.3K	1/16W	R221	NRSA63J-272	M.G.RESISTOR	2.7K	1/16W
R138	NRSA63J-104	M.G.RESISTOR	100K	1/16W	R222	NRSA63J-182	M.G.RESISTOR	1.8K	1/16W
R139	NRSA63J-104	M.G.RESISTOR	100K	1/16W	R223	NRSA63J-182	M.G.RESISTOR	1.8K	1/16W
R140	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W	R224	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W
R141	CEVPO05-472	TRIM.RESISTOR	4.7K	R.CTL	R225	NRSA63J-272	M.G.RESISTOR	2.7K	1/16W
R142	CEVPO05-472	TRIM.RESISTOR	4.7K	B.CTL	R226	NRSA63J-152	M.G.RESISTOR	1.5K	1/16W
R143	NRSA63J-822	M.G.RESISTOR	8.2K	1/16W	R227	NRSA63J-821	M.G.RESISTOR	820	1/16W
R144	NRSA63J-100	M.G.RESISTOR	10	1/16W	R228	NRSA63J-154	M.G.RESISTOR	150K	1/16W
R145	NRSA63J-473	M.G.RESISTOR	47K	1/16W	R229	NRSA63J-0R0	M.G.RESISTOR	0	1/16W
R146	NRSA63J-153	M.G.RESISTOR	15K	1/16W	R230	NRSA63J-104	M.G.RESISTOR	100K	1/16W
R147	NRSA63J-821	M.G.RESISTOR	820	1/16W	R232	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R148	NRSA63J-471	M.G.RESISTOR	470	1/16W	R233	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R149	NRSA63J-681	M.G.RESISTOR	680	1/16W	R234	NRSA63J-223	M.G.RESISTOR	22K	1/16W
R150	QVPC406-102	TRIM.RESISTOR	1K	SC	R235	NRSA63J-563	M.G.RESISTOR	56K	1/16W
R151	NRSA63J-0R0	M.G.RESISTOR	0	1/16W	R236	NRSA63J-683	M.G.RESISTOR	68K	1/16W
R152	NRSA63J-151	M.G.RESISTOR	150	1/16W	R237	NRSA63J-333	M.G.RESISTOR	33K	1/16W
R153	NRSA63J-221	M.G.RESISTOR	220	1/16W	R238	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R154	NRSA63J-331	M.G.RESISTOR	330	1/16W	R239	NRSA63J-563	M.G.RESISTOR	56K	1/16W
R155	NRSA63J-391	M.G.RESISTOR	390	1/16W	R240	NRSA63J-393	M.G.RESISTOR	39K	1/16W
R156	NRSA63J-472	M.G.RESISTOR	4.7K	1/16W	R241	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R157	NRSA63J-103	M.G.RESISTOR	10K	1/16W	R242	NRSA63J-563	M.G.RESISTOR	56K	1/16W
R158	NRSA63J-104	M.G.RESISTOR	100K	1/16W	R243	NRSA63J-333	M.G.RESISTOR	33K	1/16W
R159	NRSA63J-104	M.G.RESISTOR	100K	1/16W	R244	NRSA63J-153	M.G.RESISTOR	15K	1/16W
R160	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W	R245	NRSA63J-123	M.G.RESISTOR	12K	1/16W
R161	NRSA63J-473	M.G.RESISTOR	47K	1/16W	R246	NRSA63J-333	M.G.RESISTOR	33K	1/16W
R162	NRSA63J-471	M.G.RESISTOR	470	1/16W	R247	NRSA63J-333	M.G.RESISTOR	33K	1/16W
R163	QVPC406-502	TRIM.RESISTOR	5K	V.P.	R248	NRSA63J-123	M.G.RESISTOR	12K	1/16W
R165	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W	R249	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R166	QVPC406-103	TRIM.RESISTOR	10K	H	R250	NRSA63J-332	M.G.RESISTOR	3.3K	1/16W
R167	NRSA63J-272	M.G.RESISTOR	2.7K	1/16W	R251	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R168	NRSA63J-0R0	M.G.RESISTOR	0	1/16W	R252	NRSA63J-473	M.G.RESISTOR	47K	1/16W
R169	QVPC406-103	TRIM.RESISTOR	10K	IRIS.LEVEL	R253	NRSA63J-473	M.G.RESISTOR	47K	1/16W
R170	NRSA63J-0R0	M.G.RESISTOR	0	1/16W	R254	NRSA63J-104	M.G.RESISTOR	100K	1/16W
R171	NRSA63J-104	M.G.RESISTOR	100K	1/16W	R301	NRSA63J-101	M.G.RESISTOR	100	1/16W
R172	NRSA63J-104	M.G.RESISTOR	100K	1/16W	R302	NRSA63J-152	M.G.RESISTOR	1.5K	1/16W
R173	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W	R303	NRSA63J-332	M.G.RESISTOR	3.3K	1/16W
R174	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W	R304	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R175	NRSA63J-104	M.G.RESISTOR	100K	1/16W	R306	NRSA63J-472	M.G.RESISTOR	4.7K	1/16W
R176	NRSA63J-333	M.G.RESISTOR	33K	1/16W	R308	NRSA63J-103	M.G.RESISTOR	10K	1/16W
R177	NRSA63J-0R0	M.G.RESISTOR	0	1/16W	R309	NRSA63J-122	M.G.RESISTOR	1.2K	1/16W
R201	NRSA63J-152	M.G.RESISTOR	1.5K	1/16W	R310	CEVPO05-222	TRIM.RESISTOR	2.2K	CCD.IRIS
R202	CEVPO05-223	TRIM.RESISTOR	22K	AWB.B	R311	NRSA63J-122	M.G.RESISTOR	1.2K	1/16W
R203	CEVPO05-223	TRIM.RESISTOR	22K	AWB.R	R312	NRSA63J-392	M.G.RESISTOR	3.9K	1/16W
R204	NRSA63J-103	M.G.RESISTOR	10K	1/16W	R313	NRSA63J-562	M.G.RESISTOR	5.6K	1/16W
R205	NRSA63J-472	M.G.RESISTOR	4.7K	1/16W	R314	NRSA63J-223	M.G.RESISTOR	22K	1/16W

Symbol No.	Part No.	Part Name	Description		Symbol No.	Part No.	Part Name	Description	
R315	NRSA63J-103	M.G.RESISTOR	10K	1/16W	C112	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R316	NRSA63J-101	M.G.RESISTOR	100	1/16W	C113	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R317	NRSA63J-562	M.G.RESISTOR	5.6K	1/16W	C114	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R318	NRSA63J-153	M.G.RESISTOR	15K	1/16W	C115	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R319	NRSA63J-153	M.G.RESISTOR	15K	1/16W	C116	NCB31HK-103	CER.CAPACITOR	0.010	50V
R320	NRSA63J-334	M.G.RESISTOR	330K	1/16W	C117	NCT06CH-470	CER.CAPACITOR	47P	50V
R321	NRSA63J-334	M.G.RESISTOR	330K	1/16W	C118	NCT06CH-680	CER.CAPACITOR	68P	50V
R322	NRSA63J-273	M.G.RESISTOR	27K	1/16W	C119	NCB31HK-103	CER.CAPACITOR	0.010	50V
R323	NRSA63J-104	M.G.RESISTOR	100K	1/16W	C120	NCT06CH-560	CER.CAPACITOR	56P	50V
R324	NRSA63J-473	M.G.RESISTOR	47K	1/16W					
R325	NRSA63J-473	M.G.RESISTOR	47K	1/16W	C121	NCT06CH-100	CER.CAPACITOR	10P	50V
R326	NRSA63J-223	M.G.RESISTOR	22K	1/16W	C122	NCB31HK-103	CER.CAPACITOR	0.010	50V
R328	NRSA63J-274	M.G.RESISTOR	270K	1/16W	C201	NCT06CH-101	CER.CAPACITOR	100P	50V
R329	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W	C202	NCT06CH-560	CER.CAPACITOR	56P	50V
R330	NRSA63J-104	M.G.RESISTOR	100K	1/16W	C203	NCT06CH-560	CER.CAPACITOR	56P	50V
R331	NRSA63J-104	M.G.RESISTOR	100K	1/16W	C204	NCT06CH-560	CER.CAPACITOR	56P	50V
R332	NRSA63J-104	M.G.RESISTOR	100K	1/16W	C205	NCB31HK-103	CER.CAPACITOR	0.010	50V
R333	NRSA63J-104	M.G.RESISTOR	100K	1/16W	C206	NCB21EK-104	CER.CAPACITOR	0.10	25V
R338	NRSA63J-332	M.G.RESISTOR	3.3K	1/16W	C207	NCT06CH-390	CER.CAPACITOR	39P	50V
R339	NRSA63J-183	M.G.RESISTOR	18K	1/16W	C208	NEE21AM-475	TAN.CAPACITOR	4.7	10V
R340	NRSA63J-103	M.G.RESISTOR	10K	1/16W	C209	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R342	NRSA63J-0R0	M.G.RESISTOR	0	1/16W	C210	NEE21AM-225	TAN.CAPACITOR	2.2	10V
R344	NRSA63J-104	M.G.RESISTOR	100K	1/16W	C211	NEE21AM-225	TAN.CAPACITOR	2.2	10V
R345	NRSA63J-104	M.G.RESISTOR	100K	1/16W TK-1180E	C212	NEE21AM-225	TAN.CAPACITOR	2.2	10V
R346	NRSA63J-104	M.G.RESISTOR	100K	1/16W TK-1280E	C213	NCB21HK-473	CER.CAPACITOR	0.047	50V
R348	NRSA63J-104	M.G.RESISTOR	100K	1/16W	C214	NCB21HK-473	CER.CAPACITOR	0.047	50V
R350	NRSA63J-104	M.G.RESISTOR	100K	1/16W	C215	NCB21HK-473	CER.CAPACITOR	0.047	50V
R352	NRSA63J-104	M.G.RESISTOR	100K	1/16W	C216	NCB21HK-473	CER.CAPACITOR	0.047	50V
R353	NRSA63J-104	M.G.RESISTOR	100K	1/16W	C217	NCB21HK-473	CER.CAPACITOR	0.047	50V
R354	NRSA63J-103	M.G.RESISTOR	10K	1/16W	C218	NCB21HK-473	CER.CAPACITOR	0.047	50V
R355	NRSA63J-103	M.G.RESISTOR	10K	1/16W	C219	NCB21HK-473	CER.CAPACITOR	0.047	50V
R356	NRSA63J-103	M.G.RESISTOR	10K	1/16W	C220	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R357	NRSA63J-103	M.G.RESISTOR	10K	1/16W	C221	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R358	NRSA63J-103	M.G.RESISTOR	10K	1/16W	C222	NEE21CM-105	TAN.CAPACITOR	1.0	16V
R359	NRSA63J-103	M.G.RESISTOR	10K	1/16W	C301	NEA10JM-226	E.CAPACITOR	22	6.3V
R360	NRSA63J-103	M.G.RESISTOR	10K	1/16W	C302	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R361	NRSA63J-103	M.G.RESISTOR	10K	1/16W	C303	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R362	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W	C304	NEE21VM-104	TAN.CAPACITOR	0.10	35V
R363	NRSA63J-103	M.G.RESISTOR	10K	1/16W	C305	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R364	NRSA63J-103	M.G.RESISTOR	10K	1/16W	C306	NEE21CM-105	TAN.CAPACITOR	1.0	16V
R365	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W	C307	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R366	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W	C308	NCB21EK-104	CER.CAPACITOR	0.10	25V
R367	NRSA63J-102	M.G.RESISTOR	1.0K	1/16W	C309	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R369	NRSA63J-183	M.G.RESISTOR	18K	1/16W	C311	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R370	NRSA63J-473	M.G.RESISTOR	47K	1/16W	C312	NCF31CZ-104	CER.CAPACITOR	0.10	16V
R371	NRSA63J-183	M.G.RESISTOR	18K	1/16W	C313	NEA10JM-226	E.CAPACITOR	22	6.3V
R372	NRSA63J-471	M.G.RESISTOR	470	1/16W	C314	NCF31CZ-104	CER.CAPACITOR	0.10	16V
C101	NEA10JM-226	E.CAPACITOR	22	6.3V	C315	NEE21VM-474	TAN.CAPACITOR	0.47	35V
C102	NCF31CZ-104	CER.CAPACITOR	0.10	16V	C316	NCT06CH-150	CER.CAPACITOR	15P	50V
C103	NEA10JM-226	E.CAPACITOR	22	6.3V	C317	NCT06CH-150	CER.CAPACITOR	15P	50V
C104	NEA11CM-106	E.CAPACITOR	10	16V					
C105	NEA11CM-106	E.CAPACITOR	10	16V	L301	CELP008-101	COIL	100UH	
C106	NEA11CM-106	E.CAPACITOR	10	16V					
C107	NCF31CZ-104	CER.CAPACITOR	0.10	16V	X301	CE41216-001	CRYSTAL	4MHz	
C108	NCF31CZ-104	CER.CAPACITOR	0.10	16V					
C109	NCF31CZ-104	CER.CAPACITOR	0.10	16V	S101	NSS1A23-C01	SELECT SWITCH	WHITE BALANCE	
C110	NCF31CZ-104	CER.CAPACITOR	0.10	16V	S102	CESD004-004	DIP SWITCH	SHUTTER MODE	
C111	NCF31CZ-104	CER.CAPACITOR	0.10	16V					

## ● TERMINAL board assembly list 06

SCK2336-02-40A (TK-1280E)

SCK2336-02-61A (TK-1180E)

06□□□□□□

Symbol No.	Part No.	Part Name	Description
CN7	CHB102W-24R	CONNECTOR	24PIN
CN8	CHB102W-24R	CONNECTOR	24PIN
TP101	SSV1096-001	TEST POINT	
TP102	SSV1096-001	TEST POINT	
TP201	SSV1096-001	TEST POINT	
TP301	SSV1096-001	TEST POINT	
TP302	SSV1096-001	TEST POINT	

Symbol No.	Part No.	Part Name	Description
Q1	2SC2778(C)	TRANSISTOR	MATSUSHITA
D1	S1ZB10	BRIDGE DIODE	SINDENGEN
D3	MA157	DIODE	MATSUSHITA TK-1280E
D4	MA157	DIODE	MATSUSHITA TK-1280E
D5	MA157	DIODE	MATSUSHITA
D6	MA157	DIODE	MATSUSHITA
D7	MA157	DIODE	MATSUSHITA
D8	MA157	DIODE	MATSUSHITA
D9	MA157	DIODE	MATSUSHITA
D10	MA157	DIODE	MATSUSHITA
D11	MA157	DIODE	MATSUSHITA
LD1	SEL2310G	LED(GREEN)	
R1	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R2	NRSA02J-680	M.G.RESISTOR	68 1/10W TK-1280E
R3	NRSA02J-680	M.G.RESISTOR	68 1/10W TK-1280E
R4	NRSA02J-680	M.G.RESISTOR	68 1/10W
R5	NRSA02J-272	M.G.RESISTOR	2.7K 1/10W
R6	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R7	NRSA02J-563	M.G.RESISTOR	56K 1/10W
R8	NRSA02J-820	M.G.RESISTOR	82 1/10W
R9	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R10	QRZ0098-1R0	W.RESISTOR	1
R11	NRSA02J-564	M.G.RESISTOR	560K 1/10W
R12	NRSA02J-564	M.G.RESISTOR	560K 1/10W
C1	QER40JM-107	E.CAPACITOR	100 6.3V
C2	NCB21EK-104	CER.CAPACITOR	0.10 25V
C3	NCB21EK-104	CER.CAPACITOR	0.10 25V
C4	NCB21EK-104	CER.CAPACITOR	0.10 25V
C5	NCB21EK-104	CER.CAPACITOR	0.10 25V
C6	NCB21HK-103	CER.CAPACITOR	0.010 50V
C7	NCB21HK-103	CER.CAPACITOR	0.010 50V
C8	NCB21HK-473	CER.CAPACITOR	0.047 50V
C9	NCB21HK-473	CER.CAPACITOR	0.047 50V
C10	NCB21HK-473	CER.CAPACITOR	0.047 50V
C11	NCB21HK-473	CER.CAPACITOR	0.047 50V
CN9	CHB102W-22R	CONNECTOR	22PIN
TP1	SSV1096-001	TEST POINT	
TP2	SSV1096-001	TEST POINT	
TP3	SSV1096-001	TEST POINT	
FC1	YU40832	FUSE CLIP	
FC2	YU40832	FUSE CLIP	
△ F1	QMF51E2-1R0S	FUSE	1A 250V

● MOTHER board assembly list 07  
 SCK2336-01-P0A  
 (TK-1280E/1281EG/1180E)

07□□□□□□

Symbol No.	Part No.	Part Name	Description
IC1	UPC358G	I.C.(M)	NEC
IC2	AN8002M	I.C.(M)	MATSUSHITA
Q1	2SB956(ST)	TRANSISTOR	MATSUSHITA
Q2	2SB956(ST)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-332	M.G.RESISTOR	3.3K 1/10W
R2	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R3	NRSA02J-563	M.G.RESISTOR	56K 1/10W
R4	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R5	NRVA02D-4701	M.F.RESISTOR	47 1/10W
R6	NRVA02D-5601	M.F.RESISTOR	56 1/10W
R7	NRSA02J-332	M.G.RESISTOR	3.3K 1/10W
R8	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R9	NRSA02J-563	M.G.RESISTOR	56K 1/10W
R10	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R11	CEVP005-471	TRIM.RESISTOR	470 5V.ADJ
R12	NRSA02J-182	M.G.RESISTOR	1.8K 1/10W
R14	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R15	NRSA02J-0R0	M.G.RESISTOR	0 1/10W
R16	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
C2	QEHA1EM-227	E.CAPACITOR	220 25V
C3	QEHA1EM-227	E.CAPACITOR	220 25V
C4	QEHA1EM-227	E.CAPACITOR	220 25V
C5	QEHA1EM-227	E.CAPACITOR	220 25V
C6	NCB21HK-473	CER.CAPACITOR	0.047 50V
C7	NCB21HK-473	CER.CAPACITOR	0.047 50V
C8	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C10	NEE11CM-226	TAN.CAPACITOR	22 16V
C11	NCB21HK-473	CER.CAPACITOR	0.047 50V
C12	NEE21CM-105	TAN.CAPACITOR	1.0 16V
C14	NEE11CM-226	TAN.CAPACITOR	22 16V
C15	NCB21HK-473	CER.CAPACITOR	0.047 50V
CN1	CHB102W-24P	CONNECTOR	24PIN
CN2	CHB102W-24P	CONNECTOR	24PIN
CN3	CHB102W-18P	CONNECTOR	18PIN
CN4	CHB102W-18P	CONNECTOR	18PIN
CN5	CHB102W-24P	CONNECTOR	24PIN
CN6	CHB102W-24P	CONNECTOR	24PIN
CN7	CHB102W-24P	CONNECTOR	24PIN
CN8	CHB102W-24P	CONNECTOR	24PIN
CN9	CHB102W-22P	CONNECTOR	22PIN
CP1	ICP-F10	I.C.PROTECTOR	

● CONNECTOR board assembly list 08  
 SCK2341-03-40A (TK-1281EG)

08□□□□□□

Symbol No.	Part No.	Part Name	Description
CN9	CHB102W-22R	CONNECTOR	22PIN
CN13	SCV1770-015	CONNECTOR	15PIN
CN15	SCV1770-005	CONNECTOR	5PIN

# TK-1280E/-1180E/-1281EG

## ● TERMINAL board assembly list 09

SCK2341-02-40A (TK-1281EG)

09000000

Symbol No.	Part No.	Part Name	Description
Q1	2SC2778(BC)	TRANSISTOR	MATSUSHITA
D3	MA157	DIODE	MATSUSHITA
D4	MA157	DIODE	MATSUSHITA
D5	MA157	DIODE	MATSUSHITA
D6	MA157	DIODE	MATSUSHITA
D7	MA157	DIODE	MATSUSHITA
D8	MA157	DIODE	MATSUSHITA
D9	MA157	DIODE	MATSUSHITA
D10	MA157	DIODE	MATSUSHITA
D11	MA157	DIODE	MATSUSHITA
LD1	SEL2310G	LED(GREEN)	
R1	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R2	NRSA02J-680	M.G.RESISTOR	68 1/10W
R3	NRSA02J-680	M.G.RESISTOR	68 1/10W
R4	NRSA02J-680	M.G.RESISTOR	68 1/10W
R5	NRSA02J-272	M.G.RESISTOR	2.7K 1/10W
R6	NRSA02J-223	M.G.RESISTOR	22K 1/10W
R7	NRSA02J-563	M.G.RESISTOR	56K 1/10W
R8	NRSA02J-820	M.G.RESISTOR	82 1/10W
C1	NEA10JM-107	E.CAPACITOR	100 6.3V
CN13	SCV1770-015	CONNECTOR	15PIN
TP1	SSV1096-001	TEST POINT	
TP2	SSV1096-001	TEST POINT	
TP3	SSV1096-001	TEST POINT	

## ● POWER board assembly list 10

SCK2341-01-40A (TK-1281EG)

10000000

Symbol No.	Part No.	Part Name	Description
D1	S1ZB10	BRIDGE DIODE	SINDENGEN
R9	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R10	QRZ0098-1R0	W.RESISTOR	1 2W
R11	NRSA02J-564	M.G.RESISTOR	560K 1/10W
R12	NRSA02J-564	M.G.RESISTOR	560K 1/10W
C2	NCB21EK-104	CER.CAPACITOR	0.10 25V
C3	NCB21EK-104	CER.CAPACITOR	0.10 25V
C4	NCB21EK-104	CER.CAPACITOR	0.10 25V
C5	NCB21EK-104	CER.CAPACITOR	0.10 25V
C10	NCB21HK-473	CER.CAPACITOR	0.047 50V
C11	NCB21HK-473	CER.CAPACITOR	0.047 50V
C14	NCB21HK-103	CER.CAPACITOR	0.010 50V
C15	NCF21HZ-104	CER.CAPACITOR	0.10 50V
△ CN14	SCV1752-002	CONNECTOR	2PIN
CN15	SCV1770-005	CONNECTOR	5PIN
FC1	YU40832	FUSE CLIP	for F1
FC2	YU40832	FUSE CLIP	for F1
△ F1	QMF51A2-R08	FUSE	T80mA 250V